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ABSTRACT

There is a pressing need for the involvement of the educational community in electrical energy matters. The case for that involvement is persuasive as evidenced by examples of energy illiteracy in the mass communication media. Intellectual wastelands breed governmental indecision and foster conditions in which the entrepreneurial sector cannot plan optimum electric energy projects because of the lack of requisite public consensus. The issue is no longer an argument for or against public involvement in energy matters. Rather, the issue is how to involve an enlightened public in an orderly way in the governmental and entrepreneurial sectors. Utility accountants, bankers, economists, engineers, lawyers, and regulators will serve the interests of the electric industry by challenging the educator to eliminate energy illiteracy. The following topics are discussed to help meet this challenge: present and future perspectives of the electric industry, capital costs, facility costs, the regulatory process, nuclear energy, coal energy, and institutional changes. The National Nuclear Waste Policy Act of 1982 (from the Senate Congressional Record) and selections from court cases are provided in appendices. (Author/JN)

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ENERGY LITERACY: A CHALLENGING ROLE FOR THE EDUCATOR IN THE COAL AND NUCLEAR RESOURCE SELECTION PROCESS

May 13, 1982

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Preface

Utility accountants, bankers, economists, engineers, lawyers, and regulators assemble hourly, daily, weekly and monthly seeking answers to the host of strategic planning problems now confronting the electric utility industry. There is motion, most of it circular, and productive of short-term solutions to utility problems. Rationalized optimum long-term answers are not forthcoming.

Legitimate inquiry would ask -- why? Are the wrong questions being asked? Are the remedial analytical techniques flawed? Are there missing participants in this quest?

These are questions which I would direct to the educational community. Every twenty years, the nation entrusts its very physical survival to educators by cycling through our educational system each succeeding generation of Americans. The phenomenon of the human life and death cycle process necessitates this action. As a nation, we accept what the schools deliver. If, as I believe, the electric utility industry is essential to the nation's economic survival, the educational infra-structure (primary and secondary) should be asked to take a look at the foregoing questions.

Strategic planning actions by electric utilities, involving the coal and nuclear options over the next twenty years, will benefit or cripple the nation's primary work force for the rest of the 20th Century -- two generations

of Americans born after World War II. The effects will cover agriculture, commerce, industry, personal life styles, and national security. Educators should be asked to review their current work product, in light of emerging energy issues and to focus upon the educational needs of persons yet to be educated.

The nation's economic and political infra-structures will not function adequately with energy illiterates. Without an informed citizenry, decisional centers controlling electric utility strategic planning will not operate either on a timely or an optimum basis. There will be continued disruption of energy resource developments, stop-gap solutions, and crazy quilt answers.

A Present Perspective

Since 1965, and perhaps even before the Northeast Blackout, the business of producing and distributing electric energy ceased to be a predictable enterprise.

Lacking predictability, utility personnel have experienced difficulty in working within the system's traditional decision centers. I refer to management and the entrepreneurial sector for the discharge of utility planning, financing, construction, and operations. I refer to the regulatory sector for the implementation of governmental policies, as they impact various aspects of electric energy production and distribution.

Predictability was lost when public policies were impressed upon the utilities by the political pressures

of the 1960's. Three aspects of this transformation are important to our discussions. First, the policies of the 1960's were the result of an activist citizenry which participated in numerous forums, most of which were outside of the administrative agency regulatory hearings generally familiar to utility managements and lawyers. Second, those public policies were topically oriented, addressed to specific concepts which the general public could comprehend -- clean water, clean air, no nukes. Third, being topical issues, these policies tended to resist rationalization of all subjects into a single integrated statement of public policies.

Accompanying these public policy matters, inflationary pressures soared. Economic game plans dissolved when economic regulatory bodies, state and federal, found it impossible to keep pace, whether because of the inadequacy of internal agency administrative procedures, or the political realities of utility rate regulation. There are limits of public acceptability of rate revenue increases which utility regulators know instinctively -- somewhat as a sixth sense.

Today, unpredictability continues. Several lead stories appearing in recent trade press publications illustrate the point:

Inside Energy, April 30, 1982, p. 9:

> INDUSTRY LEADERS STATE REGULATOR TO OFFER BUSH PRIORITIES FOR UTILITIES ... TO WORK FOR MORE STABLE REGULATIONS AFFECTING CONSTRUCTION OF POWER-

PLANTS, ... THAT A PUBLIC CONSENSUS IS NEEDED ON ... THE POTENTIAL FOR POWER SHORTAGES IN THE FUTURE AND THE NEED FOR GOVERNMENT ACTION (SUCH AS REMOVAL OF UNCERTAINTY FROM REGULATION) TO AVOID SUCH PROBLEMS.

Synfuels Week, May 3, 1982, p. 1:

INDUSTRY COALITION LOSES ON PSD VOTE

Energy Users News, May 3, 1982, p. 4:

WASTE IMPASSE MAY CLOSE SOME N-PLANTS BY '86; OTA

Energy Users Report, April 29, 1982, p. 1:

THREE MILE ISLAND CLEAN UP HAS NO "PAINLESS SOLUTION", WITNESSES AGREE AT A HOUSE SUBCOMMITTEE HEARING, BUT THEY DISAGREE SHARPLY ON HOW THE COSTS OF THE CLEANUP OF THE DAMAGED REACTOR SHOULD BE SHARED.

The Energy Daily, April 22, 1982, p. 1:

DOE: IT WON'T BE CHEAP TO WARD OFF ACID RAIN. THE DEPARTMENT OF ENERGY IS CIRCULATING A STUDY ON CAPITOL HILL PREDICTING ENORMOUS COSTS FOR ANY ATTEMPT TO CURE ACID RAIN ... BETWEEN $2 BILLION AND $6 BILLION IN 1980 DOLLARS ANNUALLY FOR EACH MILLION TONS OF SO_2 REMOVED.

NARUC Bulletin, April 26, 1982, p. 23:

LOBDELL OF OREGON ORDERS WRITEOFF OF PEBBLE AND WPPSS 5 ... LOBDELL'S ORDER ... SAID HE INTENDS TO REQUIRE THE COMPANIES TO WRITE OFF THEIR INVESTMENTS IN TWO OF THE PACIFIC NORTHWEST'S STALLED NUCLEAR POWER PROJECTS.

Electric utility personnel, by genetic pre-disposition, tend to be orderly. Historically, the physical hardware of the trade produced kilowatts and kilowatt hours, along with the advantages of decreasing costs. The regulatory forum, whether state or federal, provided a protective mantle

within which resource selection could be undertaken by management, largely upon the basis of projected costs and proven technological result.

Commencing in the 1960's and continuing throughout the 1970's, changes occurred. Economies of scale began eroding. Electric utility saturation load building, in and around the Nation's large metropolitan areas, slowed perceptably. Environmental constraints arose on a daily basis. Fuel supply security and availability became questionable. Fuel costs destabilized. Inflation roared. And this is the good news.

In 1978, the Nation forged a compromise - National Energy Policy. It is reflected in five parts of the National Energy Act of 1978, P.L. Nos. 95-617 to 621. 1/ Euphoria abounded, public expectations rose and complacency set in. Press coverage stressed the notion that the country would somehow conserve its way to energy efficiency and independence.

Due to the compromise nature of that Act, its underlying policies have not taken root uniformly or deeply throughout the nation. Various portions of the fuels and

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1/ National Energy Act of 1978: Public Utility Regulatory Policies Act of 1978, P.L. No. 95-617, 92 Stat. 3117; Energy Tax Act of 1978, P.L. No. 95-618, 92 Stat. 3174; National Energy Conservation Policy Act, P.L. No. 95-619, 92 Stat. 3206; Powerplant and Industrial Fuel Use Act of 1978, P.L. No. 95-620, 92 Stat. 3289; and Natural Gas Policy Act of 1978, P.L. No. 95-621, 92 Stat. 3350.

conservation policies have come apart or are under considerable attack at the present time. I refer to the off-gas provisions of the Powerplant and Industrial Fuel Use Act of 1978, the rate reform and cogeneration features of the Public Utility Regulatory Policies Act of 1978, the conservation auditing procedures of the National Energy Conservation Policy Act, and the phased market clearing price features of the Natural Gas Policy Act of 1978.

Congress has not been able to come to grips with nuclear storage, waste reprocessing, or the breeder. On April 29, 1982, the Senate passed S. 1662 dealing with some aspects of nuclear waste storage. The House has not passed similar legislation.

Congress is experiencing difficulty in formulating Clean Air Act changes on both the House and the Senate sides. Legislation has not passed relative to coal slurry pipelines or coal severance taxes. Legislative initiatives, to date, in each of these areas are modest.

On August 13, 1981, the President signed the Economic Recovery Tax Act of 1981, P.L. No. 97-34 ("ERTA"). This law seeks to transform the framework for initiatives to revitalize business energies and the Nation's economy. ERTA relies upon the realignment and reduction of the tax burden. Whether it will succeed or fail remains to be seen. The President and the Speaker have decidedly differing views.

Projected budget revenue shortfalls are sizeable, whether the federal budget impasse is viewed westward along

Pennsylvania Avenue toward the White House or eastward toward Capitol Hill. Whichever view one takes, the ramifications upon the electric utility industry are vast and complex affecting both utility managements and their respective customers.

A Future Perspective

This web of governmental policies (and non-policies) imposed on the electric utility industry constitutes the basic focal point of our consideration today. Is rational predictable decisionmaking possible? I believe it is attainable. However, it will not be achieved without substantial further public debate.

Electric energy is socially and politically significant. Utility industry decisional authorities -- management and regulatory -- will be able to move only as fast as this debate proceeds and resolves issues. There are no quick fixes.

Regulatory reform is not the final answer. It is aimed at institutional structure and perceived malfunctions of the regulatory process. However, they are not the primary villians plaguing the electric utility industry today. Unpredictability is the culprit (1) due to the inability of governmental authorities to articulate public policies and make their decisions stick, and (2) due to the disparate pressures of lurking inflation and credit/monetary matters.

Without a public consensus of what should be done -- when, where and at whose expense -- electric utility manage-

ments will not be able to resolve the coal and nuclear resource selection process in a rational manner. The established decision centers (the market place for entrepreneurial matters and the regulatory forum for governmental policy matters) are not equal to that task, absent such consensus. Decisions may be reached, but they will be optimum rational judgments only by chance.

There is need for a nationwide informed public understanding of utility problems and rational solutions. This means a discussion of industry concerns of financing, economics and operations; the impact of federal and state regulations; the views of those who regulate the industry; the resource alternatives of nuclear and coal as a result of this regulatory framework; and how a rebalanced regulatory forum could affect the various aspects of the utility industry. Educational activities should be the number one priority in the process. Advocacy of a particular utility's preferred resulting answer should be the second priority, distinguishing the utility's position from opposing positions based upon the merits of each.

There exists today, in this Nation, an educational infra-structure adequate to the task. Universities, community colleges, and secondary schools offer great potential and they are a forum which remains largely untapped in developing the required public consensus on electric energy matters.

Importantly, their use does not preclude concurrent activities before legislative bodies, regulatory agencies

and the courts. All activities should continue with appropriate degrees of sophistication and format in presenting the issues and facts for public consensus purposes. Legislators, regulators, and utility spokesmen have need to recognize the role of the educator.

If so applied, the educational infra-structure will utilize the recognized tools of the educator. The end product of the educator's art obviously will not be the particular result desired by some or perhaps many persons who are now struggling with utility problems. However, there will be an informed public. There will be an ability to arrive at the needed public consensus. There will be public views and conclusions, so as to allow utility decision centers (entrepreneurial and regulatory) to function with predictable outcome and projected degrees of certainty.

While I am not an educator, I offer to that profession six groups of topics to be discussed in the public consensus formulation process: capital costs, facility costs, regulatory processes, nuclear, coal and institutional changes.

Capital Costs

In 1982, industry concerns of financing, economics, and operations dominate the scene. Sanford Weill, Chief Executive Officer of Shearson/American Express, Inc., explains the industry's financial needs:

> Electric utilities will have to spend about $340 billion in the remainder of this decade to increase

> the efficiency of existing facilities, reduce dependence on petroleum fuels and build the minimum capacity required to meet tomorrow's power needs.
>
> At least half of that capital will have to come from outside investors. For utilities, probably more than any other kind of business, that means being able to attract the savings of individuals.

While small savers have traditionally invested in utility stocks, the performance of those investments in the last ten years leads many to question the ability of that tradition to persevere. A recently published report entitled Utilities In Crisis: A Problem In Governance, the Aspen Institute points out that:

> Utility common stock, sold in the '50's and '60's at 2 1/2 times book value, is now selling at about 75% of book value on the average. Today, very few electric utility stocks in the United States are selling above book value. The continuing practice of raising capital by sales of stock below book value has seriously diluted the ownership interests of stockholders.

Bond ratings have fallen from the range of AAA to AA to the range of A and BBB for a number of systems. Dividends to stockholders have also declined in real terms. According to the Aspen Report, the average yield is currently 11.8 percent, well below the average total investor-returns from industrial stocks or other competitive investments. To attract new stockholders, dividend rates as a percentage of earnings have increased, but a number of companies are paying common dividends that exceed cash earnings. As the Aspen Institute concludes (p. 11), "these higher rates do little to arrest the erosion of earnings for long-time utility

investors, whose real dividend returns have decreased as the market value of their stock has declined." New investments financed at costs far in excess of the rates earned on investment will continue to impact the financial condition of the industry.

The fundamental indicator of the utilities' financial concerns is the return on common equity. While the average return allowed by regulatory bodies was 14.3 percent in 1980, they actually earned only 11.4 percent. In 1973, 12.3 percent was authorized and 11.3 percent was earned during a much less inflationary period. These percentages are summarized in the Aspen Report.

The public debate I have referred to has need to comprehend the realities of these numbers. Capital resource allocation is a public educational process whose time has come. Rational utility resource allocation will not be accomplished without it.

Facility Costs

A different aspect of the current utility problem, but no less a part of the public educational task is the need to communicate the changing dynamics of various costs faced by utilities. Until the late 1960's or the early 1970's, electric utilities were able to maintain declining costs largely because of technological improvements and economies of scale. Prolonged expansion of electric use in America led to increasing economies of scale through larger facilities, greater fuel efficiencies resulting from

higher temperatures and pressures in thermal generating units and improved operating capabilities through the interconnection of systems by means of high voltage transmission facilities. Fuel was available and prices were stable. Hydroelectric generation, utilized between 1945 and 1970, increased at a 4.6 percent annual rate. 2/ Its zero-fuel costs and below-average incremental operating costs proved extremely efficient. Overall, investor-owned electric utilities quadrupled their electric generation from 1950 to 1968 and lowered their operating and maintenance expenses from 9.2 mills per net kilowatt hour generated to 6.6 mills, based upon Edison Electric Institute's ("EEI") data. 3/ As Professor Arthur Thompson states, "it was truly a golden age in which to be in the electric utility industry. Utility managers thus had little reason to challenge the basic direction and definition of their business." 4/

Thereafter, several powerful forces converged upon the industry changing this golden era drastically and in a short time span. Fuel costs destabilized. Economies of large-scale operations became exhausted. New technologies did not increase operating efficiencies, and they have resulted in lesser efficiencies in many instances. Average fuel

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2/ Edison Electric Institute, 1980 Statistical Yearbook.

3/ Ibid.

4/ Dr. Arthur A. Thompson, "The Strategic Dilemma of Electric Utilities -- Part I", Public Utilities Fortnightly, March 18, 1982, p. 21.

costs per net kilowatt hour generated soared from 3.3 mills to 20.7 mills from 1970 to 1980 calculated on those same EEI figures. Non-fuel operating and maintenance expenses doubled over the same period from 4.3 mills to 8.4 mills on an average net kilowatt hour generated basis. Long-term debt increased from $42 billion to $105 billion. 5/ The costs of environmental protection rose at a staggering rate and they continue to climb. Current projections indicate that utilities will spend $45 to $60 billion for pollution control equipment through 1995. 6/ The Congressional Budget Office, while conceding the costly nature of the Clean Air Act, contends that such cost "... has not hurt the financial condition of the nation's public utilities...." The Energy Daily, May 6, 1982, p. 2.

Perhaps the most serious of the cost increases have been in the construction area. In the 1970's, the construction cost per kilowatt of new generating capacity averaged approximately $530 per kilowatt. In the 1980's, it is projected to be in the range of $1,500 to $2,000 calculated on an average basis. 7/

For growing utilities, which most systems are (albeit at different growth rates), a vicious cycle has

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5/ As reported by Moody's Investor Service and Edison Electric Institute, 1980 Statistical Yearbook.

6/ Thompson, p. 22.

7/ Thompson, p. 23.

emerged. Companies are not generating enough cash earnings to pay common stock dividends, let alone to finance any new construction. New issuances of bonds and preferred stock create new dividend requirements and added interest charges. Other inflationary cost pressures add to the squeeze on earnings. Rate increases provide temporary, and often times inadequate catch-up rate relief until another round of construction financing must begin. Pancake rate filings have become the normal practice in many rate jurisdictions.

Increases in electric utility rates have led to a new conservation ethic among customers and utility regulatory officials, based primarily upon economic considerations. The market for electric power may be reaching the saturation point in regard to conventional generation. Alternative energy sources are becoming attractive risk capital investments and could become a major energy factor in the next decade. This is particularly true among the larger industrial and commercial utility customer classes, where cogeneration processes offer opportunities to gain thermal advantages in steam or heat generation and electric energy production.

This ethic mirrors a real limit on the degree to which utilities can promote increased use of electricity to particular classes of customers, some more than others. But, even with realistic conservation goals, the replacement of old plants as well as the electric needs of an increasing population will mandate projected expenditures of some $340 billion by the electric industry over the next ten years.

In addition to these factors, increasing amounts of electricity will be required for the reindustrialization of the nation's economic base. If ERTA triggers a real increase in the annual gross national product of 4 percent to 5 percent, the March 22 Business Week concludes that:

> The Administration's plan has neglected one of the most important components of supply-side growth: electricity generation ... without corrective action the supply of available electricity over the next decade will not be sufficient to support hoped for growth.

So while economic recovery depends upon electricity, the industry may be unable to provide it.

Overall, the facility costs facing the utility industry are pronounced. Public understanding of the scope and reasons for the expenditures is essential. Without an informed public, it is doubtful that any utility management will conclude its resource choices for the future upon an optimum and rational basis.

The Regulatory Process

The mystic of the regulatory forum is a formidable educational challenge. Nevertheless, the needed public consensus must comprehend what the regulatory system is, why it operates as it does, and what limitations encumber the system from an institutional perspective. Obviously, vested interest groups of various types perceive of the regulatory forum in differing ways. They are generally known to utility representatives and other regular participants

in matters arising before federal and state economic regulatory agencies. However, from the general public's view, regulatory agency proceedings are "one or two sentence evening news stories" for the TV watcher or a "one column account" for the newspaper reader. Both types of disclosure are inadequate.

There is need for the general public to view and understand that the economic regulatory agency is one of two types of regulatory surveillance mechanisms which apply public policies to electric utility operations. Each of the fifty states has a public service commission for this purpose. At the federal level, economic regulatory public policies are applied by the Federal Energy Regulatory Commission ("FERC").

Agencies of this type apply public policies to electric utility operations. They do not, although some claim to the contrary, originate and decree public policies. Constitutionally, these agencies operate as surrogate spokespersons for their legislative parents and, thus, may not rationally claim broad public policy formulation roles. They must act within the scope of delegated legislative authority to be free from constitutional challenges.

In the calm economic climate of the 1950's, the regulation of the electric utilities was congenial and public service commissions were able to establish rate schedules that were acceptable to both customers and utilities. The Commission's raison d'etre was primarily that of a protective

mantle for both the industry and the public and, with a sound economy and stable prices, the system appeared to have been created by a genius.

There was and is an amount of federal regulation of the electric utility industry. But it is limited to interstate wholesale transactions supervised by the FERC under the Federal Power Act, 16 U.S.C. 824, et seq. Most electric sales, however, are at the retail level and are regulated by state utility commissions.

Out of the fifty state public service commissions, thirteen are elected directly by the voters, thirty-five are appointed by the governor, and two are appointed by the legislature. These origins of commission members are important to an understanding by the general public of the inherent political pressures on commissions.

By the middle of the 1970's, the relationship between the regulators and utilities reflected constituent pressures to hold down rate increases. For utilities, the result is the current financial squeeze affecting the industry. Generally, rate increases no longer compensate for increasing investment costs. As the Aspen report notes (p. 11), "utility management, despite the deficient rates of return on investment, continued to make investments in the new capacity believed necessary to meet future demand. The burden of costs not borne by ratepayers fell upon the stockholders."

The realities of how the economic ratemaking process has been operating reflects an economic time that has passed; a time when electric utilities were a low-risk business, with a declining cost of product. The situation has now changed: the risks are high, product costs are rising and the governmental regulatory mechanism (that governs rates, certificates plant, and protects the consumer) no longer functions in an adequate manner when dealing with resource selection and future utility service matters. There is need for a full public understanding of these facts.

Virtually all literature on this issue recommends higher rates so utilities can cut the gap between marginal costs and current prices. But the current system of economic regulation by public service commissions and the FERC tends to inhibit this reality. Utility managerial choices, when selecting future facilities, are controlled in many parts of the nation by a standard of "what the utility can pay for", not "what may be best" for the utility service overall.

The second governmental surveillance mechanism which applies to electric utilities comprehends environmental controls. I refer to matters such as air and water quality controls, land use controls, and aesthetic regulation. As to these, the general public's perspection is one of limited knowledge. Although perhaps more persons know something about these types of controls, it is doubtful that many persons comprehend the relation of environmental controls and economic regulatory controls over utilities. They should.

Environmental-type laws were not occasioned solely, or even primarily, by the operation or planning of electric utility systems. These laws generally were not drafted with specific reference to technical or operational problems of electric systems "vis-a-vis" industrial plants. They require substantial interpretation for any particular application. Environmental laws usually are not found within the Code chapter on federal or state public utility laws. Rather, these types of controls are located in a plethora of federal and state statutes, local ordinances, and implementing rules, regulations and orders. Within many of these constraints the expressed public policies are overlapping -- most are diffused and many are contradictory in their literal wording and purposes.

Experience, to date, shows that some critics of utility system planners have been successful in using environmental laws to gain participation in utility plant construction and operational matters. This participation seeks to assess "how the utility performs the task of rendering utility service." This activity generally reflects "after the fact" planning arguments. Consequently, numerous second guessing springs from utility planners and opponents.

When resource selection is undertaken and new utility plants are built, these problems become acute. The Environmental Protection Agency, state and local environmental agencies, and local zoning boards all now play a

most vigorous role in land, air and water use decisions, largely in response to local citizen pressures. As a Ford Foundation report states, "This crazy quilt of uncoordinated government actions does not add up to a coherent program to assure either reasonable prices or environmental protection." 8/

There is need for broad public understanding of the conceptual effort to rationalize governmental energy policy in the last ten years and why that effort is faltering at the present time. In 1977, the President declared that the "energy crisis" is the moral equivalent of war. His national energy plan was to wage this war on five fronts:

- conservation and fuel efficiency;
- rational pricing and production policies;
- reasonable certainty and stability in government policies;
- substitution of abundant energy resources for those in short supply; and
- development of non-conventional technologies for the future.

In theory, the ensuing legislation enacted in response to these proposals pushed the federal government to the forefront of national energy coordination. This was the National Energy Act. In practice, the statute has

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8/ Energy Policy Project of the Ford Foundation, A Time to Choose, Cambridge: Ballinger, 1974, p. 265.

proven to be of marginal significance. It rests upon political compromises which are eroding. As noted, various portions of the constituent statutory provisions are under legislative and judicial attack.

Nuclear

The resource choices of nuclear or coal that the industry faces are not the energy panaceas. They are more accurately dubbed a Hobson's choice. Each resource has many associated problems. Nevertheless, these two resources constitute the foreseeable energy future in central station bulk power supply for the current decade and probably the ensuing ten years thereafter.

Public support for these sources will not occur unless the public understands the underlying pros and cons, as well as the consequences of electrical shortages that will occur unless one or both of these resources are utilized. While alternative renewable energy resources may come on line in the next century, the balance of this century will be concerned with the nuclear or coal option.

Twelve percent of the electricity generated in this country comes from nuclear powerplants, and up to twenty-two percent in New England. While the country is hardly dependent on nuclear power, it does have a sizeable investment in it. According to the Atomic Industrial Forum, the United States now has 72 operating nuclear plants, 70 others under construction, and 9 more on order. U.S. News and World

Report reported in August of 1979 "that even nuclear energy's staunchest foes admit that demands to close existing plants are unrealistic. To shut down even a few would trigger serious power shortages, notably in New England and the South." Little has occurred in the last three years to alter that assessment. Indeed, the 1981 DOE evaluation of Electric Power Supply and Demand for the Contiguous United States 1981-1990 (DOE/EP-002, p. v) states among the general conclusions:

> To assure nation-wide reliable electric system operation, and reduction in the use of oil by electric utilities, current schedules for construction, licensing and commercial operation of the following nuclear units should be maintained:
>
> | | |
> |---|---|
> | Diablo Canyon 1 | Watts Bar 1 |
> | Diablo Canyon 2 | Sequoyah 2 |
> | Comanche Peak | McGuire 1 */ |
> | San Onofre 2 | Shoreham 1 |
> | Summer 1 | |

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*/ As of June 18, 1981, this unit had a license to operate at 5% of full power.

Currently, the United States has entered a nuclear depression with unanticipated costs and equipment failures leading to the cancellation of a number of plants under construction. No applications to build a new nuclear power-plant have been filed with the Nuclear Regulatory Commission since 1978, and numerous projects have been dropped or deferred. The Washington Post reported on April 4, 1982, that "in 1980, 16 reactors were cancelled and 70 delayed. In 1981,

six were cancelled and 44 deferred." John Sillin of Booz Allen & Hamilton explains that "a 1,200 megawatt nuclear unit going into service in the early 1990's will cost over $3.2 billion, a tenfold increase in price since the early 1970's.... The average asset size of the 35 largest electric utility companies in 1980 was $5.2 billion." 9/

A new but significant problem for the nuclear industry has emerged in the form of steam-generating equipment that had been expected to last the life of the reactor but does not. Repairs on these generators are expensive. Stewart Udell of Critical Mass notes that "of 45 pressurized water reactors, 39 have had problems with that equipment." 10/ Other problems such as the premature aging of the vessel that holds the reactor core and the decommissioning of old nuclear plants pose as yet undefined problems.

March 28, 1979, brought the worst accident in the history of commercial nuclear generation. The Kemeny Commission's Report on the Three Mile Island disaster found the need for fundamental changes in "the organization, procedures and practices -- and above all - in the attitudes of the Nuclear Regulatory Commission and ... of the nuclear

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9/ "Nuclear Power Industry Runs Out of Steam", Washington Post, April 4, 1982, p. F-8, quoting John Sillin.

10/ Ibid., p. F-8.

industry." Shock waves from this accident still reverberate throughout the utility industry and the nation as a whole. The accident caused equipment damage but no fatalities.

As reflected in a variety of public opinion polls taken since the accident, there is increased opposition to the use of nuclear energy. However, those same polls still show a majority of Americans supporting continued operation of nuclear energy. The Opinion Research Corporation here in Princeton found 70 percent of Americans last September in favor of the continued use of nuclear energy, 60 percent in favor of continuing the construction of plants and 52 percent for starting up new plants. Harris and Cambridge polls a year after TMI also found a plurality in favor of construction.

Perhaps the most interesting poll on the subject was a survey of Congressmen conducted in November 1981 by the Columbia Institute for Political Research. That poll found 71 percent of Congressmen in favor of the expanded use of nuclear power. There appears to be an attitude within the nation that sources of electricity are hardly in overabundance and that despite all the disadvantages of nuclear energy, its viability is still intact.

Liability for TMI is hotly debated. Legislation requiring all United States licensed nuclear utilities to share the $1 billion cost of cleaning up the disabled Three Mile Island reactor was approved by the Senate Energy Committee

on March 31st. Supporters argue that the TMI cleanup is a national problem. Others argue that General Public Utilities could bear the burden of cleanup without inordinate problems. In a recent House Interior Committee hearing, Rep. Morris K. Udall is reported as stating "that progress in putting together a workable cleanup funding package has been losing ground to the escalating costs of the cleanup...." Energy Users Report, Vol. 10, No. 17, p. 425. Subsequent captions in the report tell the fundamental story: "Thornburgh's Plan: 'Excellent' Reception, No Money; Opposition to Cleanup Legislation; Bankers Warn of GPU's Precarious Position".

Disposal of used nuclear materials is the matter of a more basic fundamental public concern than another TMI-type accident. Nuclear wastes with lifespans of thousands of years present a difficult problem for the industry. In December 1981, a Washington Post editorial stated that "the lack of a nuclear waste policy remains one of the chief bars to a healthy nuclear power industry. There is no imminent technological crisis -- but after 20 years without a solution, the public, Wall Street and even the nuclear industry are all losing confidence that the problem will ever be solved." A Department of Energy report released last June concedes that by the year 2000 the nation will be burdened with millions of tons of atomic wastes. 11/ The Court of Appeals for

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11/ United Press International, "DOE Report Concedes A-Waste Poses Burden", June 17, 1981.

the District of Columbia Circuit has focused upon precisely this issue in setting aside the Nuclear Regulatory Commission's Table S-3 Rule. 12/

Plans to dispose of utility nuclear waste are numerous and a technology for waste disposal has been known for years. Nevertheless, Congressional debate over the details of each plan have prevented implementation. This year is no exception. The two essential components of a waste plan involve (1) creation of a permanent repository that will contain wastes safely for thousands of years, and (2) interim storage until the permanent site is ready.

State participation in such a plan has been a key area of controversy. What is the proper role of the states? Should they have a say in the siting process but not an outright veto. Clearly, the waste problem is national in scope. Would it then be inappropriate to allow for any outright state veto?

S. 1662 was approved by the full Senate last month and allows states to veto a site if either the House or Senate concurs with the objection. Besides state participation, its provisions allow for away from reactor interim storage, geologic burial for permanent storage, tests and evaluations

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12/ Natural Resources Defense Council, Inc. and Consolidated National Intervenors v. U.S. N.R.C. and U.S.A., No. 74-1586 and Natural Resources Defense Council, Inc. v. U.S. N.R.C. and U.S.A., Nos. 77-1448, 79-2110, and 79-2131 (D.C. Cir., April 27, 1982).

by DOE, and allowance for retrieving spent fuel after it has been stored. The issue of storing military wastes was peripherally addressed in the legislation. As passed, the bill appears in Attachment 1, together with selected pages of the D.C. Court of Appeals decision on the S-3 Rule. 13/

House action on a nuclear waste bill is much more divided with three committees having jurisdiction over the issue. While some compromises have been reached between the Committees, it is difficult at this time to predict whether the full House will pass a measure this year. Delay reflects the tensions produced by lobbying efforts on the part of both environmental and industry groups. In the long run, the controversial details of the bills are minor, when compared to the overriding need for an effective waste disposal system. The health of the nuclear industry rests upon Congressional resolution of the waste problem.

Related to the waste problem is the issue of breeder and reprocessing technology. The late 1960's saw speculation that projected growth of nuclear reactors could substantially reduce the uranium supplies needed to fuel the plants. Not all of the uranium is used up in the fissioning process. Portions end up mixed with the spent fuel. Separating or reprocessing this fuel eases demands on virgin uranium supplies. In the more advanced process of the breeder reactor, more

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13/ S. 1662, 97th Cong., 1st Sess. (1981), approved in Senate 69-9, April 29, 1982, 128 Cong. Rec. 4325.

fissionable material is produced than is consumed. But these technologies remain in the research and development stage. With demand for uranium not as high as expected due to the fall-off in the construction of plants, reprocessing and breeder reactors do not currently enjoy intense interest. The present administration seeks to rekindle the government's research effort in the Clinch River Breeder Reactor, but the NRC has not expedited the licensing process and regulatory questions are still prominent. These include primarily the cost of delay of licensing. Commissioner Ahearne of the NRC cast the decisive vote against expediting licensing because of DOE's "'sloppy' presentation of the costs of delay -- which changed from $150 million to $47 million to $28 million over the course of a week...." 14/ Cost overruns have also afflicted the project from a 1973 projection of $669 million to $3.2 billion in 1981, according to a staff memorandum prepared by the House Energy and Commerce Committee. 15/

A further overriding concern relative to the entire nuclear fuel cycle is that of weapons proliferation. Increasing the use of uranium and plutonium increases the possibility

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14/ The Energy Daily, "Whither Clinch River In Wake of NRC Vote Denying An Early Start?", March 8, 1982, p. 2.

15/ House Energy and Commerce Committee, Oversight Subcommittee, "Preliminary Findings -- CRBR Project -- A cost and Technical Fiasco", Interoffice Memoranda, July 1981.

of terrorist diversion of these materials. The problem is especially acute abroad where diversion of materials is more likely to occur than in the United States. The development of India's atomic bomb occurred after the operation of a small scale nuclear powerplant. International safeguards on the use of nuclear materials become a part of this consideration, thereby further complicating an already complicated topic.

The Kemeny Commission made reform of the Nuclear Regulatory Commission a matter of high priority. Since TMI, the NRC has passed through two phases. The first year and a half were consumed by six separate investigations of the accident to correct the deficiencies discovered at both the NRC and in the industry. The current administration seeks ways to speed up the licensing of new reactors. But a recent discovery of the improper construction of reinforcements to prevent earthquake damage at the Diablo Canyon nuclear reactor has set back the licensing speed-up movement.

Recent Congressional hearings and other investigations have pointed out specific problems with the NRC procedures. Critics of the nuclear industry argue that the reported errors at Diablo Canyon and other plants in Texas, Ohio, and elsewhere point to a failure of quality assurance programs and to the NRC's lack of response. Nunzio Palladino, NRC Chairman, stated in Congressional testimony last November:

"After reviewing both industry and NRC past performances in quality assurance, I readily acknowledge that neither have been as effective as they should have been...." 16/ Chairman Palladino informed the utility executives last December that NRC will do all it can to avoid delay in the 33 full-power operating license applications now expected to come before it by the end of 1983. But he cautioned that this rate of licensing activity would not result in "cursory reviews" by the NRC's licensing or hearing staff. Perhaps the Chairman is stating that the agency will proceed with all deliberate speed.

In October 1981, a report by the House Committee on Government Operations rejected utility industry claims of unwarranted NRC licensing delay. Construction problems appear to be the single greatest cause of the delays as "fossil-experienced utilities venturing into the nuclear arena have been troubled by the unexpected complexity and novelty of nuclear technology." The House report goes on to find fault with NRC actions to expedite licensing reform in that it is undermining long-term safety and public confidence. 17/

Overall, a variety of unexpected problems have injured the American nuclear industry. Recent Congressional

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16/ Washington Post, Editorial: "A New Look At Nuclear Power," November 24, 1981

17/ Ninth Report by the Committee on Government Operations, "Licensing Speedup, Safety Delay, NRC Oversight", H.Rep. 277, 97th Cong., 1st Sess. (1981), pp. 41 and 42.

investigations of the NRC suggest that reforms should be centered more at upgrading inspections and safety review than expediting licensing. Cash poor utilities have been hit by construction problems and are cancelling projected plants. So, while the French supply 40 percent of their electricity production from nuclear power, the United States remains at around 12 percent. Federal assistance of the industry is weakened by the lack of settled permanent waste disposal and reprocessing arrangements, as well as cuts in nuclear regulatory and research budgets. In short, the industry faces gargantuan financial, technical and regulatory problems.

There is a public support "bright side" for the nuclear option if current polls are accurate. The industry does have the advantage of a public consensus for continued operation. How long that support will last is questionable, given the other unresolved problems of the nuclear option. Educational activities clearly are needed in the area of waste disposal, reprocessing and reactor quality assurance matters to sustain the needed public consensus.

Coal

Coal is the logical near-term resource alternative. It currently is the lead fuel supplier of the electric utility industry at about 47 percent of the fuel sources. On pure economic grounds, the 1981 Energy Information Administration's ("EIA") Annual Report sees high oil and natural gas prices

continuing to push the United States toward coal as a primary energy source. EIA's analysis projects a minimum 3.5 to 1 price advantage over oil in 1995. Fuel switching features of the Fuel Use Act complement these underlying economic pressures. However, there are problems associated with the coal option.

Legislative changes relative to the Clean Air Act are unresolved, largely due to the fact that Congress is grappling with a host of environmental air quality issues. Many of these do not affect the electric utility industry directly. However, in resource selection matters, indirect effects are no less real.

Overall, the Congressional platter is filled with bills relating to auto industry assistance, coal production increases, acid rain problems, halocarbon production regulations, ambient air quality standards, technological standards, transportation controls and the role of the states in the enforcement of air quality requirements. 18/ Coal severance tax legislative issues remain unresolved. That is also the case with respect to coal slurry pipelines and the eminent domain issues. 19/

18/ See, for example, H.R. 2258, H.R. 1518, H.R. 1035, H.R. 3471, S. 540, S. 541, S. 542, S. 723, H.R. 946, S. 517, H.R. 1853, 97th Cong., 1st and 2nd Sess.

19/ See, for example, H.R. 1374, H.R. 4230 and H.R. 1313, 97th Cong., 1st Sess.

Coal production and coal utilization by the electric utility industry could be skewed by legislative actions taken to meet perceived industrial and transportation problems. It may well be that Congress does not have a view of what the general public consensus is relative to increased production and consumption of fossil fuels - solid, gaseous or liquid. Senator Robert Stafford has publicly complained that "Americans are not getting enough information about the complicated congressional review of the law ... 'The Washington Post, for example, ... sent its environmental reporter to El Salvador where she has been covering the conflict there. One consequence of this has been not only the Post but the many large newspapers that subscribe to the Post's news service have been without adequate coverage of this issue for their readers.'" NARUC Bulletin, No. 18-1982, May 3, 1982, p. 26.

Industrial coal consumption in the United States is projected to increase from 127 million tons in 1980 to 272 million tons in 1995. Electric utility coal consumption is expected to grow about 4 percent a year through 1990, when electric utilities are expected to use 835 million tons a year or about three-fourths of all coal consumed in the United States. Coal should account for 60 percent of electrical generation by 1995 according to EIA's 1981 Annual Report to Congress. 20/

20/ "Coal Seen Increasing As Primary Fuel", Coal Outlook, March 8, 1982, p. 3, quoting the Energy Information Administration's Annual Report.

While there are no supply constraints on the use of coal, the potential for creating adverse health and environmental effects occurs at all stages of the coal cycle from production to its ultimate consumption. Environmental concerns of strip mining and acid rain as well as the dangers of underground mining and other pollution emmissions suggest caution and the use of environmental safeguards whenever dealing with coal.

The National Energy Plan of 1977 projected coal production would reach 1.2 billion tons by 1985, about double the 1978 level of 660 million tons. Restraints on increased coal use have intervened. They include the increased costs of meeting environmental regulations, the lack of a coal distribution infra-structure, the higher costs of coal rail transportation, and the high cost or inability to convert some existing oil and gas-burning steam generating equipment to coal-firing. These constraints were not foreseen when the National Energy Plan was presented. Coal demand has lagged well behind what coal mine operators projected when they invested millions in new mines. In 1980, 200 mining firms went bankrupt.

Current world oil supplies have tempered the price differential between coal and oil. That condition, coupled with reduced electric utility load growth projections and high interest rates have complicated the utility resource selection process, particularly in cases where oil-burning

equipment has several years of life to run. Reuters reported in January of this year that officials of the International Energy Agency fear "managers in the manufacturing and electricity generating industries do need to be reminded of the fragility of Middle East oil suppliers." Consolidation Coal's chief economist takes the view "... about the effect of falling oil prices on the coal industry. He thinks they are good for coal." The Energy Daily, April 22, 1982, p. 2. The underlying assumption of Consolidation is that falling oil prices will tend to regenerate domestic economic growth, thus increasing electric utility loads and fuel needs.

Whatever the correct answer may be relative to near-term coal and oil pricing, it is clear that the maze of environmental and safety rules have discouraged coal use. A General Accounting Office study estimates that government regulations have reduced productivity in the nation's mines by 43 percent over the last decade. 21/ Coal's growth is in question with environmental controls. The issue of acid rain could place an even greater constraint on coal use. Strategies for meeting this problem include increased use of scrubbers, coal switching and coal washing. As noted above, DOE projects that annual direct costs of removing a million tons of SO_2 would fall between $2 and $6 billion in 1980 dollars.

21/ General Accounting Office, "Low Productivity in American Coal Mining: Causes and Cures", March 1981. GAO No. EMD-81-17.

A variety of pollutants are emitted into the air when coal is burned or processed. These pollutants include compounds of sulfur and nitrogen, particulates, trace elements, and hydrocarbons. A number of recent studies beginning in 1972 with the United Nations Conference on the Human Environment have found that a large part of the acidity of the rainfall is related to sulfates in the atmosphere produced by chemical transformations of sulfur dioxide emitted hundred of miles away.

In September 1981, the National Academy of Science reported that evidence on the role of powerplant emissons in the production of acid rain is "overwhelming". 22/ The Academy also found that at the current rates of emission of sulfur and nitrogen oxides, the number of affected lakes can be expected to more than double by 1990. The coal-fired Midwest was identified as a principal causal factor. Another report by the Institute of Ecology in Indiana for the Office of Technology Assessment suggests that 3,000 lakes and 25,000 miles of streams in the Eastern United States have been "altered by acidic emissions". 23/ Canadian officials testi-

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22/ National Academy of Sciences, Atmosphere Biosphere Interactions: Toward a Better Understanding of the Ecological Consequences of Fossil Fuel Combustion, September 1981, p. 3.

23/ "Congressional and Rain Fight Heating Up", Coal Outlook, April 12, 1982, p. 3, quoting from the OTA study entitled "Impacts of Atmospheric Alternations" (to be released June 1982).

fied October 6th before a House of Representatives Committee urging further limitations on United States sulfur dioxide and nitrogen oxide emissions to control acid rain. 24/

Alternative studies have appeared suggesting that the Midwest is not the principal source of emissions. For example, Professor Kenneth Rahn of the University of Rhode Island, in a study released this January, found that "the Northeast is now seen to have a rich variety of sources and transport, a complexity that was totally unanticipated.... Ironically, the midwestern sources that we had expected to find the most easily have proven the hardest to detect." Rahn's work, yet to be published widely in scientific journals, undoubtedly is being reviewed by his peers at the Academy of Sciences who believe that powerplants are a main cause for increased acidity in rain. Academic disputes should not be ignored in the utility resource selection process.

Congressional support for legislation to control acid rain has been lukewarm. An amendment to the Clean Air Act proposed by Rep. Toby Moffett 25/ to mandate a 10 million ton per year reduction in sulfur dioxide emission was defeated

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24/ Bureau of National Affairs, Environmental Reporter, "Canada Asks Congress to Increase Pollution Controls to Abate Acid Rain", pp. 7-8, October 9, 1981, hearings before the House Energy and Commerce Subcommittee on Health and the Environment, October 6, 1981.

25/ "The Acid Rain Struggle: Dingell Prevails (Again)", The Energy Daily, March 11, 1982, p. 1.

in the Committee. Other bills have been introduced but appear to be going nowhere. A survey of Congressional offices in March of this year by the Columbia Institute for Political Research found that "42 percent believe that acid rain controls are premature at this time ... while 34 percent support legislation to increase controls." Lacking requisite interest for action in Congress, the acid rain problem remains an unresolved issue. It is a factor in future consideration of coal use.

Other long-term environmental questions affect coal use. For example, the National Research Council warns that "by the middle of the next century, emissions of carbon dioxide, an unavoidable (and essentially uncontrollable) product of fossil fuel combustion, may produce such concentrations in the atmosphere as to produce large and virtually irreversible alterations in the world climate." 26/ Water supplies could be another limiting factor in either synthetic fuels production or electrical generation. This is already a limiting factor in some western locations.

Coal transportation has become a two-pronged problem as the industry has grown. The financial condition of some major eastern coal-hauling railroads pose problems for greatly expanded coal transport in the East. Railroad transportation

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26/ The National Research Council of the National Academy of Science, Energy In Transition 1985-2010, 1980, p. 147.

charges throughout the nation are increasing very rapidly. The use of slurry pipelines could ease transportation problems nationally, but such pipelines await Congressional action on expanded water use questions and the refusal of railroads to grant rights-of-way, i.e., the eminent domain issue.

On balance, the problems associated with the coal option are manageable, provided that environmental governmental policies are articulated. Entrepreneurial decisionmaking in these areas cannot bridge that void.

Institutional Changes

Consideration of the resource selection question would not be complete without review of two types of institutional changes -- one on the utility side and one on the governmental side. Diversification of electric utilities into other business ventures now commands a substantial amount of attention nationwide. Several groups of utility systems (gas and electric) are studying the matter as is the Securities Exchange Commission ("SEC"), National Association of Regulatory Utility Commissioners, and a number of state resource regulatory bodies. Changes in the Public Utility Holding Company Act, 15 U.S.C. 79 et seq. are being proposed including repeal of that Act. The SEC favors repeal and has so advised the Congress. Letter of Chairman John S.R. Shad to Senator A.M. D'Amato, dated December 21, 1981.

Diversification could take a number of forms. For example, vertical disintegration of electric systems

could result in spinoffs, such as the distribution function or the generation function. Vertical and horizontal changes could also result in moving the existing utility operation under a holding company arrangement, with parallel non-utility business operations being conducted by affiliated corporate entities. Subsidiaries of utility systems are another possibility.

On the governmental side, institutional changes are being discussed by a great number of persons with a focus on two areas. Shorthand references to these are (1) deregulation of electric generation and sales at wholesale, and (2) regulatory reform of the administrative agency process. Conceptually, deregulation of the bulk power supply function substitutes managerial judgment and the commercial rules of the market place for regulatory standards and utility commission rules: FERC primarily, but in some instances, state public service commissions or the Rural Electric Administration, in the case of federally financed cooperatively-owned systems.

In this ongoing debate, regulatory reform concepts are justified on several grounds: as streamlining agency regulatory procedures, eliminating red tape and relating major new regulatory rules to a cost/benefit justification standard before such rules are promulgated. Attachment 2 includes a summary of regulatory reform concepts as envisaged in a recent Senate-passed bill (S. 1080), a pending House

bill (H.R. 746) and the President's 1981 Executive Order 12291.

Institutional changes impact resource selection questions quite differently from other considerations discussed heretofore. They bring together in a new matrix the two decision centers -- the business decision entrepreneurial center and the governmental regulatory center. How the electric utility industry would be comprised, how it would plan and decide resource selection questions, how it would operate on a day-to-day basis, with or without regulatory constraints are questions to be considered as a part of the corporate strategic planning process.

I have given a substantial amount of attention to diversification, deregulation and regulatory reform matters, as have other members of my firm in the course of our legal work. Underlying questions transcend the coal or nuclear options and the electric utility resource selection process. They can and do involve major issues of energy marketing strategies and new interrelationships between governmental and managerial decision centers. A large number of permutations are possible.

SUMMATION

In conclusion, there is a pressing need for the involvement of the educational community in electric energy matters. The case for that involvement is persuasive. One need only look to the mass communication media for daily

examples of energy illiteracy. Intellectual wastelands breed governmental indecision, and foster conditions in which the entrepreneurial sector cannot plan optimum electric energy projects because of the lack of requisite public consensus.

The issue is no longer an argument for or against public involvement in energy matters. Rather, the issue is how to involve an enlightened public in an orderly way in the governmental sector and the entrepreneurial sector. Utility accountants, bankers, economists, engineers, lawyers, and regulators will serve the interests of the electric industry by challenging the educator to eliminate energy illiteracy.

I am pleased to respond to questions which you may have.

ATTACHMENT 1

tunately, we cannot make this next vote a 10-minute rollcall vote.

NATIONAL NUCLEAR WASTE POLICY ACT OF 1982

The Senate continued with its consideration of the bill (S. 1662).

The PRESIDING OFFICER. The question is, Shall the bill, as amended, pass?

Mr. McCLURE. Mr. President, I ask for the yeas and nays.

The PRESIDING OFFICER. Is there a sufficient second? There is a sufficient second.

The yeas and nays were ordered.

The PRESIDING OFFICER. The clerk will call the roll.

The legislative clerk called the roll.

Mr. STEVENS. I announce that the Senator from South Dakota (Mr. ABDNOR), the Senator from Colorado (Mr. ARMSTRONG), the Senator from Tennessee (Mr. BAKER), the Senator from New Jersey (Mr. BRADY), the Senator from Alabama (Mr. DENTON), the Senator from Minnesota (Mr. DURENBERGER), the Senator from North Carolina (Mr. EAST), the Senator from Arizona (Mr. GOLDWATER), the Senator from Oregon (Mr. HATFIELD), the Senator from California (Mr. HAYAKAWA), the Senator from New Mexico (Mr. SCHMITT), and the Senator from Wyoming (Mr. WALLOP) are necessarily absent.

I further announce that, if present and voting, the Senator from Tennessee (Mr. BAKER), the Senator from Alabama (Mr. DENTON), the Senator from North Carolina (Mr. EAST), and the Senator from Arizona (Mr. GOLDWATER) would each vote "yea."

Mr. CRANSTON. I announce that the Senator from Delaware (Mr. BIDEN), the Senator from Arkansas (Mr. BUMPERS), the Senator from Florida (Mr. CHILES), the Senator from Missouri (Mr. EAGLETON), the Senator from Kentucky (Mr. FORD), the Senator from Kentucky (Mr. HUDDLESTON), the Senator from Louisiana (Mr. LONG), the Senator from Montana (Mr. MELCHER), the Senator from Arkansas (Mr. PRYOR), and the Senator from Tennessee (Mr. SASSER) are necessarily absent.

On this vote, the Senator from Tennessee (Mr. SASSER) is paired with the Senator from Montana (Mr. MELCHER).

If present and voting, the Senator from Tennessee would vote "yea" and the Senator from Montana would vote "nay."

The PRESIDING OFFICER. Are there other Senators in the Chamber desiring to vote?

The result was announced—yeas 69, nays 9, as follows:

[Rollcall Vote No. 93 Leg.]

YEAS—69

Andrews	Burdick	Cohen
Baucus	Byrd, Harry F., Jr.	Cranston
Bentsen	Byrd, Robert C.	D'Amato
Boren	Cannon	Danforth
Boschwitz	Chafee	DeConcini
Bradley	Dodd	Dole
Domenici	East	Randolph
Exon	Kennedy	Roth
Garn	Laxalt	Rudman
Glenn	Lugar	Sarbanes
Gorton	Mathias	Simpson
Gramley	Matsunaga	Specter
Hart	Mattingly	Stafford
Hatch	McClure	Stevens
Hawkins	Metzenbaum	Symms
Heflin	Mitchell	Thurmond
Heinz	Moynihan	Tower
Helms	Murkowski	Tsongas
Humphrey	Nickles	Warner
Inouye	Nunn	Weicker
Jackson	Packwood	Zorinsky
Jepsen	Pell	
Johnston	Proxmire	

NAYS—9

Cochran	Leahy	Riegle
Dixon	Levin	Stennis
Hollings	Percy	

NOT VOTING—22

Abdnor	Durenberger	Long
Armstrong	Eagleton	Melcher
Baker	East	Pryor
Biden	Ford	Sasser
Brady	Goldwater	Schmitt
Bumpers	Hatfield	Wallop
Chiles	Hayakawa	
Denton	Huddleston	

So the bill (S. 1662), as amended, was passed as follows:

S. 1662

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Nuclear Waste Policy Act of 1982".

TITLE I—FINDINGS AND PURPOSE

FINDINGS

SEC. 101. The Congress finds and declares that—

(a) a reliable system adequate to provide sufficient electrical energy to meet the Nation's current and anticipated needs is an essential part of a comprehensive national energy policy and is vital to national security and public welfare;

(b) an adequate electrical system requires a diversified base of primary energy sources in order to avoid excessive reliance upon any single alternative energy source;

(c) a diverse base of primary energy sources can be achieved only if each available source competes on an equal footing in decisions on the siting and construction of facilities for generating commercial electric power;

(d) nuclear energy can—

(1) make a significant contribution to national supplies of electricity;

(2) offer site-specific advantages in environmental impact, cost, and fuel availability over other primary sources of energy; and

(3) help reduce United States dependence on insecure sources of foreign oil;

(e) lack of an effective Federal policy for the interim storage of spent fuel and disposal of nuclear waste from civilian nuclear activities unreasonably burdens the choice of nuclear energy as an alternative primary source in decisions on siting and construction and operation of powerplants and unduly constrains efforts to establish a diverse base of primary energy sources;

(f) the persons owning and operating civilian nuclear powerplants have the primary responsibility for providing for the interim storage of spent fuel from civilian nuclear powerplants, but the Federal Government has the responsibility to provide sufficient capacity for interim storage of spent fuel for those civilian nuclear powerplants that cannot reasonably provide adequate onsite storage capacity when needed to assure the continued, orderly operation of the powerplant;

(g) the Federal Government has the responsibility for the disposal of high-level radioactive waste from civilian nuclear activities in order to protect the public helath and the safety, the environment, and the common defense and security;

(h) the costs associated with the storage and disposal of nuclear waste from civilian activities should, to the greatest extent possible, be borne by the direct beneficiaries of such activities and should be considered in the selection or rejection of nuclear energy over alternative primary energy sources;

(i) the technology exists and is under development which would provide reasonable assurance that spent fuel and high-level radioactive waste can be safely disposed of and that disposal facilities for spent fuel and high-level wastes can be available when needed;

(j) nuclear wastes generated in the national defense program have been accumulating for more than thirty years, and spent nuclear fuel and nuclear wastes from the commercial industry are increasing rapidly;

(k) nuclear waste has become a major issue of public concern, and stringent precautions must be taken to ensure that nuclear wastes do not adversely affect the public health and safety of this or future generations;

(l) the siting, development, and loading of nuclear waste repositories are responsibilities of the Federal Government;

(m) public confidence in the ability of the Federal Government to manage a program providing for the safe and permanent disposal of nuclear wastes must be substantially increased if nuclear power is to contribute significantly to meeting the energy needs of the United States in the future;

(n) Federal nuclear waste disposal programs have been ineffective due to—

(A) inadequate coordination among the various Federal agencies and departments which have responsibilities relating to nuclear waste management; and

(B) the lack of a policymaking process which integrates the views of all Federal agencies and departments into a comprehensive Government-wide policy;

(o) the Secretary must increase his efforts to consult and cooperate with States and localities concerning Federal repository siting, development, and loading activities;

(p) a successful nuclear waste management strategy requires the full participation of State and local officials, Indian representatives and the public in a step-by-step, technologically sound program, to promote public confidence in the safe disposal of nuclear waste, consistent with the responsibility of the Federal Government to determine public health and safety matters related to such program; and

(q) the first step in a successful nuclear waste management strategy is the establishment of a national schedule for the development of programs and facilities for the storage and disposal of high-level radioactive waste and spent fuel in a timely manner.

PURPOSE

SEC. 102. The purpose of this Act is to—

(a) assume the Federal responsibility for the acquisition and interim storage of spent fuel from civilian nuclear powerplants where needed to assure the orderly operation of such plants, and for the disposal of high-level radioactive waste from civilian nuclear activities;

(b) establish a definite Federal policy for the disposal of high-level radioactive waste from civilian nuclear activities and a national schedule for developing the facilities and programs needed to carry out that policy in a timely manner;

(c) authorize the Secretary to—

(1) acquire or construct at least one facility for the interim storage of spent fuel from civilian nuclear powerplants not to exceed a specified total storage capacity; and

(2) establish systems for the long-term storage and disposal of high-level radioactive waste generated by civilian nuclear activities, and to develop, construct and put in operation the facilities comprising these systems;

(d) establish a system for financing the construction, operation, and maintenance of Federal storage and disposal facilities for high-level radioactive waste and spent fuel from civilian nuclear activities;

(e) improve coordination of Federal nuclear waste management programs; and

(f) provide for improved consultation and cooperation between the Department of Energy and States and localities concerning Federal storage and repository siting and development activities, consistent with the responsibility of the Federal Government to determine public health and safety matters related to such activities.

TITLE II—DEFINITIONS AND GENERAL PROVISIONS

SEC. 201. As used in this Act the term—

(1) "civilian nuclear powerplant" means a utilization or production facility required to be licensed under section 103 or 104 b. of the Atomic Energy Act of 1954, as amended;

(2) "Commission" means the Nuclear Regulatory Commission;

(3) "disposal" means the long-term isolation of high-level radioactive waste or spent fuel in a repository;

(4) "environmental impact statement" means any document prepared pursuant to or in compliance with the requirements of section 102(2)(C) of the National Environmental Policy Act of 1969 (83 Stat. 852);

(5) "Secretary" means the Secretary of the Department of Energy;

(6) "spent fuel" means nuclear fuel that has been irradiated in and recovered from a civilian nuclear powerplant or from other civilian nuclear activities;

(7) "Department" means the Department of Energy;

(8) "Governor" means the Governor of a State, or successors to the Governor, during their respective terms of office, or their designees;

(9) "high-level radioactive waste" means the highly radioactive wastes resulting from the reprocessing of spent fuel, and includes both the liquid waste which is produced directly in reprocessing and any solid material into which such liquid waste is made;

(10) "repository" means a facility for the permanent, deep geologic disposal of high-level radioactive waste, transuranic contaminated waste, or spent fuel, whether or not such facility is designed to permit the subsequent recovery of such material, except for facilities to be used exclusively for research and development purposes containing an insignificant amount of such material;

(11) "storage" means retention of high-level radioactive waste, transuranic contaminated waste, or spent fuel with the intent to recover such material for subsequent use, processing, or disposal;

(12) "affected State" means the State in which a monitored retrievable, storage facility, test and evaluation facility, or a repository is proposed to be located;

(13) "Indian tribe" means an Indian tribe, as defined in the Indian Self-Determination and Education Assistance Act (Public Law 93-638);

(14) "affected Indian tribe" means any tribe within whose reservation boundaries a monitored retrievable storage facility, test and evaluation facility, or a repository for high-level radioactive waste or spent fuel is proposed to be located, or whose federally defined possessory or usage rights to other lands outside of the reservation's boundaries arising out of congressionally ratified treaties may be substantially and adversely affected by the locating of such a facility: *Provided*, That the Secretary of the Interior finds, upon the petition of the appropriate governmental officials of the tribe, that such effects are both substantial and adverse to the tribe;

(15) "site characterization" means the program of exploration and research, both in the laboratory and in the field, undertaken to establish the geologic conditions and the ranges of those parameters of a particular site relevant to the procedures under this part. Site characterization includes borings, surface excavations, excavation of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing needed to determine the suitability of the site for a geologic repository, but does not include preliminary borings and geophysical testing needed to decide whether site characterization should be undertaken;

(16) "atomic energy defense activities of the Department" includes those activities and facilities of the Department of Energy carrying out the functions of—

(i) naval reactors' development and propulsion;

(ii) weapons activities, verification, and control technology;

(iii) materials production;

(iv) inertial confinement fusion;

(v) defense waste management; and

(vi) defense nuclear materials, security, and safeguards,

all as included in the Department of Energy appropriations account in any fiscal year for such functions; and

(17) "monitored retrievable storage facility" means a facility under title V of this Act.

SEC. 202. (a) The provisions of titles I through VI of this Act shall not apply to the atomic energy defense activities of the Department, nor to any repository or monitored, retrievable storage facility used for the exclusive storage or disposal of spent fuel or solidified high-level radioactive waste produced only by the atomic energy defense activities of the Department.

(b)(1) The provisions of title VII shall apply to any repository or monitored, retrievable storage facility used for the storage or disposal of spent fuel or solidified high-level radioactive waste produced by the atomic energy defense activities of the Department, if such repository or facility is required by law on the date of the enactment of this Act to be licensed by the Commission: *Provided*, That none of the provisions of title VII shall require the release of classified national security information.

(2) For purposes of the application of title VII to any repository or monitored, retrievable storage facility, the terms "spent fuel" and "high-level radioactive waste" include material generated in the atomic energy defense activities of the Department.

SEC. 203. (a) The Commission is authorized and directed to develop a program of in-plant drills for nuclear powerplant operators to be conducted by civilian nuclear powerplant licensees. Such program shall include drills related to normal and abnormal operating maneuvers, drills for testing the adequacy of reactor and plant operating procedures, and the development of Commission standards for in-plant drills of civilian nuclear powerplant operators. Such program shall be developed by the Commission within the twelve-month period following the date of enactment of this Act.

(b) The Commission is authorized and directed to promulgate regulations, or other appropriate Commission regulatory guidance, for training and qualifications of civilian nuclear powerplant operators, supervisors, technicians and other appropriate operating personnel. Such regulations or guidance shall establish simulator training requirements for applicants for civilian nuclear powerplant operator licenses and for operator requalification programs; requirements governing administration of requalification examinations; requirements for operating tests at civilian nuclear powerplant simulators, and instructional requirements for civilian nuclear powerplant licensee personnel training programs. Such regulations or other regulatory guidance shall be promulgated by the Commission within the twelve-month period following the date of enactment of this Act.

(c) Within the twelve-month period following the date of enactment of this Act, the Nuclear Regulatory Commission shall submit a report to the Congress setting forth the actions which the Commission has taken with respect to fulfilling its obligations under this section.

SEC. 204. The enactment of this Act shall be construed in any Federal, State, and local administrative or judicial proceeding to satisfy any legal or statutory requirement (1) for the existence of and the approval of the United States of a demonstrated technology or means for the disposal of spent fuel and high-level nuclear waste and (2) for assurance of the safe disposal of spent fuel and high-level nuclear waste and the scheduled availability of storage and disposal facilities for high-level nuclear waste.

TITLE III—INTERIM STORAGE OF SPENT FUEL FROM CIVILIAN NUCLEAR POWERPLANTS

SEC. 301. (a) It is the policy of the Federal Government that—

(1) the persons owning and operating civilian nuclear powerplants have the primary responsibility for providing interim storage of spent fuel from such powerplants, by maximizing, to the extent practical, the effective use of existing storage facilities at the site of each civilian nuclear powerplant, by adding new onsite storage capacity in a timely manner where practical, and by the use of available privately owned and operated offsite storage facilities where practical;

(2) the Federal Government has the responsibility to encourage and expedite the effective use of existing storage facilities and the addition of needed new storage capacity at the site of each civilian nuclear powerplant; and

(3) the Federal Government has the responsibility to provide, as soon as possible, sufficient capacity for interim storage of spent fuel for those civilian nuclear powerplants that cannot reasonably provide adequate storage capacity at the site of the powerplant when needed to assure the continued, orderly operation of the powerplant.

(b) The policy under subsection (a) shall provide for—

(1) the utilization of available spent fuel pools at the site of each civilian nuclear powerplant to the extent practical and the addition of new spent fuel storage capacity where practical, either at the site of the powerplant or at an available privately owned and operated offsite storage facility; and

(2) the establishment of a federally owned and operated system for the interim storage of spent fuel at one or more away-from-reactor facilities with a limited capacity sufficient to prevent disruptions in the orderly operation of nuclear powerplants that

cannot reasonably provide adequate spent fuel storage capacity at the powerplant site when needed.

SEC. 302. (a) The Secretary, consistent with such criteria as he prescribes under the policy set forth in section 301 and as are required under this section, shall offer to enter into, and may enter into, contracts with persons owning and operating civilian nuclear powerplants or with persons holding title to spent fuel located at the site of such a powerplant, that the Secretary determines cannot reasonably provide, by utilizing available spent fuel pools to the extent practical, by adding new spent fuel storage capacity at the site of the powerplant, by the transshipment of such fuel to another powerplant within the same utility system, or by utilization of available privately owned and operated offsite storage facilities, adequate spent fuel storage capacity at the powerplant site to ensure the continued orderly operation of the powerplant through the maintenance of a full core reserve storage capability at the powerplant site: *Provided, however,* That the Secretary shall not enter into contracts for spent fuel in amounts in excess of the available storage capacity specified in section 305(a). Those contracts shall provide that the Federal Government will (1) take title at the powerplant site, to such amounts of spent fuel from the powerplants as the Secretary determines cannot be stored onsite, (2) transport the spent fuel to a federally owned and operated interim away-from-reactor storage facility, and (3) store such fuel in the facility pending further processing, storage, or disposal. The Secretary shall report to the Congress on an annual basis on the amount of spent fuel for which commitments have been made pursuant to this section.

(b) Not later than ninety days after the date of enactment of this Act, the Secretary shall propose, by rule, procedures, and criteria for making the determination required by subsection (a) that a nuclear powerplant cannot reasonably provide adequate spent fuel storage capacity at the powerplant site when needed to ensure the continued orderly operation of the powerplant through the maintenance of a full core reserve storage capability. The criteria shall identify the feasibility of reasonably providing such adequate spent fuel storage capacity, taking into account economic, technical, regulatory, and public health and safety factors, through the use of high-density fuel storage racks, fuel rod compaction, the transshipment of spent fuel to another powerplant within the same utility system, construction of additional spent fuel pool capacity, utilization of available privately owned and operated offsite storage facilities, or such other alternate technologies as the Commission may approve under section 311(b).

(c) Nothing in this Act authorizes the Secretary to take title to spent fuel, transport spent fuel, store or dispose of spent fuel or the waste products associated with spent fuel from a nuclear powerplant not located within the United States.

(d) Except as provided in sections 309 and 310, nothing in this or any other Act requires the Secretary, in carrying out the responsibilities of this section, to obtain a license or permit to possess or own spent fuel.

SEC. 303. A contract entered into under section 302 shall provide—

(a) for a one-time payment at the time the Federal Government acquires the spent fuel of a charge per unit of spent fuel, as such unit is defined by the Secretary, which charge is determined by the Secretary to be adequate to cover—

(1) the cost of transportation of such spent fuel;

(2) the proportion of the costs of the contruction and operation, maintenance and decommissioning of Federal interim away-from-reactor storage facilities, which proportion is associated with such spent fuel; and

(3) the cost of annual impact assistance payments made by the Secretary to States or appropriate units of local governments pursuant to subsection (d) of section 305; except that such impact assistance payments shall not exceed (A) 10 percent of the costs incurred in paragraphs (1) and (2), or (B) $15 per kilogram of spent fuel, whichever is less;

(b) for the retention by the owner of such spent fuel of a nontransferable right to the value of the remaining fuel resource less the costs of recovery, as determined at the time of recovery. The right ends when the Federal Government—

(1) takes action resulting in the recovery of the remaining fuel resource and gives to the owner of the right an amount of money equal to the value of the recovered fuel less the costs of recovery; or

(2) disposes of such fuel in a repository;

(c) that title to the spent fuel together with all rights to such fuel, except as otherwise provided in this Act, passes to the Federal Government at the site of the powerplant at the time the Secretary takes possession of th spent fuel; and

(d) that the contract becomes effective when the interim away-from-reactor storage facility is available as determined by the Secretary by notice in the Federal Register.

SEC. 304. (a) The Secretary shall provide notice of intent to enter into such contracts by publishing notice in the Federal Register not later than one hundred and eighty days after the date of enactment of this Act. Such notice shall contain such information as the Secretary considers appropriate concerning proposed terms and conditions of such contracts.

(b) The Secretary shall establish the one-time payment charge per unit of spent fuel rquired by section 303(a) on an annual basis, based on calculation of the costs listed in section 303(a), and shall publish such annual one-time payment charge and the calculation thereof in the Federal Register. Each such annual one-time payment charge shall become effective thirty days after publication and shall remain effective for a period thereafter of twelve months as the charge for the costs listed in section 303(a) for any spent fuel, title to which is transferred to the Federal Government during that twelve month period.

SEC. 305. (a) To the extent funds are available and in such amounts as are provided in appropriation Acts. The Secretary shall construct, acquire, or lease one or more away-from-reactor facilities for the interim storage of spent fuel from civilian nuclear powerplants with a total storage capacity at all such facilities of not more than two thousand eight hundred metric tons of uranium. The facilities shall—

(1) be made available in a timely manner to accommodate all spent fuel for which commitments have been made pursuant to section 302 of this Act; and

(2) by subject to a license under the provisions of section 202(3) of the Energy Reorganization Act of 1974 (88 Stat. 1233), as amended: *Provided,* That in determining whether to issue a license for such a facility, the Commission shall not consider the need for the facility. The Secretary shall submit to the Commission an application to construct, acquire or lease, and operate such facility not later than such date as necessary to accommodate in a timely manner all spent fuel requiring away-from-reactor storage pursuant to any determinations under section 302 of this Act. When the Secretary submits such an application to the Commission, the Secretary shall also submit a report to the Congress describing the amount of spent fuel for which commitments have been made pursuant to section 302 and the date by which the facility is needed to accommodate in a timely manner the storage of the spent fuel.

The Secretary shall not acquire any away-from-reactor facility under this section if the Secretary determines that the cost of acquiring the facility exceeds the cost of constructing a new away-from-reactor facility of equal capacity: *Provided,* That any new facility would be available when needed to satisfy the commitments made by the Secretary pursuant to section 302(a).

(b) The Secretary, in providing for the transportation of spent fuel under this Act, shall utilize by contract private industry to the fullest extent possible in each aspect of such transportation. The Secretary shall use direct Federal services for such transportation only upon a determination of the Secretary of Transportation, in consultation with the Secretary, that private industry is unable or unwilling to provide such transportation services at reasonable cost. The authority of the Secretary to enter into contracts under this section shall be limited to the extent or in such amounts as are provided in appropriations Acts.

(c) The Secretary and the Commission, on a continuing basis, shall analyze and make projections of the availability when needed of spent fuel transportation casks required to support transportation requirements pursuant to subsection (b). The Secretary and the Commission are authorized and directed to take such actions as the Secretary and the Commission, respectively, deem necessary and appropriate to ensure the timely availability when needed of such spent fuel transportation casks.

(d)(1) Beginning the first fiscal year which commences after the date of the enactment of this Act, the Secretary shall make annual impact assistance payments to a State or appropriate unit of local government, or both, in order to mitigate social or economic impacts occasioned by the construction and subsequent operation of any interim away-from-reactor storage facility within the jurisdictional boundaries of such government or governments and authorized under this title.

(2) Payments made available to States and units of local government pursuant to this section shall be—

(A) allocated in a fair and equitable manner with a priority to those States or units of local government suffering the most severe impacts; and

(B) utilized by States or units of local governments only for (i) planning, (ii) construction and maintenance of public services, (iii) provision of public services related to the siting of a facility authorized under this title, and (iv) compensation for loss of taxable property equivalent to that if the facility had been operated under private ownership.

(3) Such payments shall be subject to such terms and conditions as the Secretary determines necessary to ensure that the purposes of this section shall be achieved. The Secretary shall issue such regulations as may be necessary to carry out the provisions of this section.

(4) Payments under this section shall be made available solely from the one-time payments under subsection (a) of section 303.

(5) The Secretary is authorized to consult with States and appropriate units of local government in advance of commencement of construction of any facility authorized under this title in an effort to determine the level of the payment such government would be eligible to receive pursuant to this section.

(5) As used in this subsection, the term "unit of local government" means a county, parish, township, municipality, and shall include a borough existing in the State of Alaska on the date of the enactment of this subsection, and any other unit of government below the State level which is a unit of general government as determined by the Secretary.

SEC. 306. When an interim away-from-reactor storage facility is available, the Secretary shall take possession of and transport to a designated storage facility any spent fuel covered by a contract made under section 302 of this Act. The Secretary shall take this action within one year after the date on which the owner of such spent fuel provides notice in writing to the Secretary that such spent fuel is available.

SEC. 306A. As soon as practicable, taking into account economic, technical, regulatory, and public health and safety factors, the Secretary shall transfer any spent fuel stored at an interim away-from-reactor storage facility, authorized under this title, to a permanent geologic repository, a monitored retrievable storage facility or a commercial reprocessing facility after the issuance of an operating license by the Commission and the commencement of operation of any such facilities, but in any event such transfer of spent fuel from an interim away-from-reactor storage facility shall be initiated no later than 8 years, and shall be completed no later than 12 years, after the date of commencement of operation of such interim facility.

SEC. 307. Funds made available to the Secretary for the purpose of—

(a) acquiring plant and capital equipment or land; or

(b) for planning, construction, or modification of facilities,

to make available facilities for the interim storage of spent fuel from civilian nuclear powerplants away from the reactor under any law making appropriations of funds or authorizations for appropriations of funds for the fiscal year ending September 30, 1979, or the fiscal year ending September 30, 1980, including funds authorized and appropriated for Project 79-1-p (away-from-reactor spent nuclear fuel storage capacity) in legislation authorizing appropriations for the Department of Energy for the fiscal year ending September 30, 1980, and as contained in the authorization for the Department of Energy pursuant to title X subtitle A of the Omnibus Reconciliation Act of 1981, Public Law 97-35, for fiscal years ending on September 30, 1982, September 30, 1983, and September 30, 1984, shall be available to carry out the purposes of section 305.

SEC. 308. (a) In carrying out the provisions of sections 301 through 307 with regard to any facility for the interim storage of spent fuel from civilian nuclear powerplants which the Secretary is authorized by section 305(a) to construct, the Secretary shall, as soon as practicable, notify, in writing, the Governor and the State legislature of any State and the eligible Tribal Council of any Indian tribe in such State in which is located a potentially acceptable site for such a facility for interim storage of spent fuel of his intention to investigate that site or facility.

(b) During the course of investigation of such site or facility, the Secretary shall keep the Governor, State legislature, and eligible Tribal Council currently informed of the progress of the work, and results of the investigation. At the time of selection by the Secretary of any site or existing facility, but prior to undertaking any site-specific work or alterations, the Secretary shall promptly notify the Governor, the legislature, and any eligible Tribal Council in writing of such selection, and subject to the provisions of subsection (f) of this section, shall promptly enter into negotiations with such State and eligible Tribal Council to establish a cooperative agreement under which such State and Council shall have the right to participate in a process of consultation and concurrence, based on public health and safety and environmental concerns, in all stages of the planning, siting, development, construction, operation, and closure of a facility within such State for the interim storage of spent fuel from civilian nuclear powerplants. Public participation in the negotiation of such an agreement shall be provided for and encouraged by the Secretary, the State, and the eligible Tribal Council. The Secretary, in cooperation with the States and Indian tribes, shall develop and publish minimum guidelines for public participation in such negotiations, but the adequacy of such guidelines or any failure to comply with such guidelines shall not be a basis for judicial review.

(c) The cooperative agreement shall include, but need not be limited to, the sharing in accordance with applicable law of all technical and licensing information, the utilization of available expertise, the facilitating of permitting procedures, joint project review, and the formulation of joint surveillance and monitoring arrangements to carry out applicable Federal and State laws. The cooperative agreement also shall include a detailed plan or schedule of milestones, decision points and opportunities for State or eligible Tribal Council review and objection. Such cooperative agreement shall provide procedures for negotiating and resolving objections of the State and eligible Tribal Council in any stage of planning, siting, development, construction, operation, or closure of such a facility within such State. The terms of any cooperative agreement shall not affect the Nuclear Regulatory Commission's authority under existing law.

(d) For the purpose of this part of this title, "process of consultation and concurrence" means a methodology by which the Secretary (1) keeps the State and eligible Tribal Council fully and currently informed about the aspects of the project related to any potential impact on the public health and safety, (2) solicits, receives, and evaluates concerns and objections of such State and Council with regard to such aspects of the project on an ongoing basis, and (3) works diligently and cooperatively to resolve, through arbitration or other appropriate mechanisms, such concerns and objections. The process of consultation and concurrence shall not include the grant of a right to any State or Tribal Council to exercise an absolute veto of any aspect of the planning, siting, development, construction, and operation of the project.

(e) The Secretary and the State and eligible tribal Council shall seek to conclude the agreement required by subsection (b) as soon as practicable but not later than one hundred and eighty days following the date of notification of the selection under subsection (b). The Secretary shall periodically report to the Congress thereafter on the status of the agreements approved under subsection (c). Any report to the Congress on the status of negotiations of such agreement by the Secretary shall be accompanied by comments solicited by the Secretary from the State and eligible Tribal Council.

(f)(1) If, within the ninety-day period after the Governor of a State or an eligible Tribal Council receives its notice of the selection of a site in accordance with subsection (b) of this section, such Governor or eligible Tribal Council, or both, notifies the Secretary, in writing, of his or its objection to the facility, the Secretary shall suspend further work on such facility and promptly transmit the Governor's, or Tribal Council's or both, objections, together with the Secretary's comments and recommendations, to the President. Unless the President, within the ninety-day period following the receipt by him of the notice of such objections so transmitted by the Secretary, determines that such facility is essential to the national interest, the Secretary shall terminate all activities specific to the establishment of such facility. Such determination shall not be subject to judicial or administrative review.

(2) In considering any objection by a State or eligible Tribal Council transmitted to the President under this subsection, the President may obtain the reviews and comments of the Nuclear Regulatory Commission on such objections. The provision of reviews by the Commission shall not be construed as binding the Commission with respect to any licensing action pertaining to the facility which is the subject of any such objection.

(g) As used in this section, the term "eligible Tribal Council" means the governing body of any Indian tribe within whose reservation boundaries there is located a potentially acceptable site for an interim storage facility for spent fuel from civilian nuclear powerplants, or within which boundaries a site for such facility is selected by the Secretary, or whose federally defined possessory or usage rights to other lands outside of the reservation's boundaries arising out of congressionally ratified treaties, as determined by the Secretary of the Interior pursuant to a petition filed with him by the appropriate governmental officials of such tribe, may be substantially and adversely affected by the establishment of any such facility.

SEC. 309. Section 202(3) of the Energy Reorganization Act of 1974 is amended to read:

"(3) Facilities used primarily for the receipt and storage or disposal of high-level radioactive waste or spent fuel resulting from activities licensed under such Act or spent fuel from foreign reactors transferred under a subsequent arrangement authorized under such Act.".

SEC. 310. Transportation of spent fuel under section 306 shall be subject to licensing and regulation by the Commission and by the Secretary of Transportation as provided for transportation of commercial spent fuel under existing law.

SEC. 311. (a) The Secretary, the Commission, and other appropriate Federal officials shall take such actions as they consider necessary to encourage and expedite the effective use of existing storage facilities and the addition of needed new storage capacity at the site of each civilian nuclear powerplant consistent with—

(1) the protection of the public health, safety, and the environment;

(2) economic considerations;

(3) continued operation of the powerplant; and

(4) otherwise applicable law.

In taking such action, the Secretary, the Commission, and other appropriate Federal officials shall consider the views of the population surrounding such powerplant.

(b) The Secretary, in consultation with the Commission, shall establish a cooperative program to assist and encourage the

private development of alternate technologies for the storage of spent fuel at the sites of civilian nuclear powerplants, with the objective of developing one or more alternate technologies that the Commission can adopt by rule on a generic basis for use at the sites of all civilian nuclear powerplants without the need for additional site-specific approvals by the Commission to the maximum extent practicable. For the purposes of this subsection, "alternate technologies" shall include, but are not limited to, spent fuel storage casks.

(c)(1) It shall be the policy of the United States to cooperate with and provide technical assistance to non-nuclear weapon states in the field of spent fuel storage and disposal.

(2)(A) Within ninety days of enactment of this Act, the Secretary and the Commission shall publish a joint notice in the Federal Register stating that the United States is prepared to cooperate with and provide technical assistance to non-nuclear weapon states in the fields of at-reactor spent fuel storage; away-from-reactor spent fuel storage; monitored, retrievable spent fuel storage; geologic disposal of spent fuel; and the health, safety, and environmental regulation of such activities. The notice shall summarize the resources that can be made available for international cooperation and assistance in these fields through existing programs of the Department and the Commission, including the availability of: (i) data from past or on-going research and development projects; (ii) consultations with expert Department or Commission personnel or contractors; and (iii) liaison with private business entities and organizations working in these fields.

(B) The joint notice described in the preceding subparagraph shall be updated and reissued annually for five succeeding years.

(3) Following publication of the annual joint notice referred to in paragraph (2), the Secretary of State shall inform the governments of non-nuclear weapon states and, as feasible, the organizations operating nuclear power plants in such states, that the United States is prepared to cooperate with and provide technical assistance to non-nuclear weapon states in the fields of spent fuel storage and disposal, as set forth in the joint notice. The Secretary of State shall also solicit expressions of interest from non-nuclear weapon state governments and non-nuclear weapon state nuclear power reactor operators concerning their participation in expanded United States cooperation and technical assistance programs in these fields. The Secretary of State shall transmit any such expressions of interest to the Department and the Commission.

(4) With his budget presentation materials for the Department and the Commission for fiscal years 1984 through 1989, the President shall include funding requests for an expanded program of cooperation and technical assistance with non-nuclear weapon states in the fields of spent fuel storage and disposal as appropriate in light of expressions of interest in such cooperation and assistance on the part of non-nuclear weapon state governments and non-nuclear weapon state nuclear power reactor operators.

(5) For the purposes of this subsection, the term "non-nuclear weapon state" shall have the same meaning as that set forth in Article IX of the Treaty on the Non-Proliferation of Nuclear Weapons (21 U.S.C. 438).

(6) Nothing in this subsection shall authorize the Department or the Commission to take any action not authorized order existing law.

SEC. 312. (a) Any person filing an application with the Commission after the date of enactment of this Act for a license, or for an amendment to an existing license, to expand the spent fuel storage capacity at the site of a civilian nuclear powerplant, through the use of high-density fuel storage racks, fuel rod compaction, the transshipment of spent fuel to another powerplant within a utility system, the construction of additional spent fuel pool capacity, or by other means, may submit a petition to the Commission for issuance of the license or license amendment on an interim basis prior to the conduct or completion of any required hearing upon such application. Any petition submitted under this section shall include a statement of the reasons why the application for the license or amendment was not submitted sufficiently in advance to eliminate the need for issuance of the license or license amendment on an interim basis. Such statement shall not prejudice the Commission's consideration of such petition.

(b) The Commission shall grant the petition submitted under subsection (a) and issue the license or license amendment on an interim basis if the Commission determines that—

(1) in all respects other than the conduct or completion of any required hearing, the requirements of law are met;

(2) in accordance with such requirements, there is reasonable assurance that the activities authorized by the license or license amendment during the interim period, in accordance with the terms and conditions of such license or license amendment, will provide adequate protection to the public health and safety and the environment during the interim period; and

(3) there is a reasonable expectation that refusal to grant the petition will prevent the petitioner from providing in a timely manner adequate capacity for spent fuel storage at the site of the powerplant to maintain a full core reserve storage capability:

Provided, however, That the Commission may not issue a license or license amendment on an interim basis for the first application received by the Commission for the license or license amendment to expand onsite spent fuel storage capacity by the use of a new technology not previously approved for use at any nuclear powerplant by the Commission. For the purposes of this section, the term "new technology" means a general type or means of storage expansion and not a site-specific proposal.

(c) The Commission shall make the determinations under subsection (b) as expeditiously as possible after receipt of a petition submitted under subsection (a).

SEC. 313. (a) In any Commission hearing pursuant to section 189 of the Atomic Energy Act of 1954, as amended, on an application for a license, or for an amendment to an existing license, filed after the date of enactment of this Act, to expand the spent fuel storage capacity at the site of a civilian nuclear powerplant, through the use of high-density fuel storage racks, fuel rod compaction, the transshipment of spent fuel to another such powerplant within the same utility system, the construction of additional spent fuel pool capacity or dry storage capacity, or by other means, the Commission shall, at the request of any party, provide an opportunity for oral argument with respect to any matter which the Commission determines to be in controversy among the parties. The oral argument shall be preceded by such discovery procedures as the rules of the Commission shall provide. The Commission shall require each party, including the Commission staff, to submit in written form, at the time of the oral argument, all the facts, data and arguments upon which that party proposes to rely that are known at such time to that party. Only facts and data in the form of sworn testimony or affidavit may be relied upon by the parties during oral argument. Of the materials that may be submitted by the parties during oral argument, the Commission shall only consider those facts and data that are submitted in the form of sworn testimony or affidavit.

(b)(1) At the conclusion of any oral argument under subsection (a) of this section, the Commission shall designate any disputed question of fact, together with any remaining questions of law, for resolution in an adjudicatory hearing only if it determines that—

(A) there is a genuine and substantial dispute of fact which can only be resolved with sufficient accuracy by the introduction of evidence in an adjudicatory hearing; and

(B) the decision of the Commission is likely to depend in whole or in part on the resolution of such dispute.

(2) In making a determination under this subsection, the Commission shall designate in writing the specific facts that are in genuine and substantial dispute, the reason why the decision of the agency is likely to depend on the resolution of such facts, and the reason why an adjudicatory hearing is likely to resolve the dispute.

(c) No court shall hold unlawful or set aside a decision of the Commission in any proceeding described in subsection (a) because of a failure by it to use a particular procedure pursuant to this section unless—

(1) an objection to the procedure used was presented to the Commission in a timely fashion or there are extraordinary circumstances that excuse the failure to present a timely objection, and

(2) the court finds that such failure has precluded a fair consideration and informed resolution of a significant issue of the proceeding taken as a whole.

SEC. 314. In any proceeding on an application for a license, or for an amendment to an existing license, filed after the date of enactment of this Act, to expand the spent fuel storage capacity at the site of a civilian nuclear powerplant, through the use of high-density fuel storage racks, fuel rod compaction, the transshipment of spent fuel to another such powerplant within the same utility system, the construction of additional spent fuel pool capacity or dry storage capacity or by other means, the Commission shall not consider as alternatives the storage of spent fuel in away-from-reactor storage facilities, the reduction or cessation of plant operations, or no action.

TITLE IV—DISPOSAL OF SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL

SEC. 401. (a) It is the Policy of the Federal Government that—

(1) the Federal Government has the responsibility to provide for the permanent disposal of solidified high-level radioactive waste and spent fuel;

(2) spent fuel, unless otherwise processed, and solidified high-level radioactive waste must be permanently disposed of in a federally owned and operated repository;

(3) such permanent disposal in a repository shall occur without regard to interim storage of spent fuel pursuant to title III and long-term storage of solidified high-level radioactive waste or spent fuel pursuant to title V;

(4) the Federal Government has the responsibility to assure that repositories capable of safely disposing of solidified high-level radioactive waste and spent fuel are

available with sufficient capacity when needed; and

(5) the Federal Government has the responsibility to demonstrate as soon as possible that solidified high-level radioactive waste and spent fuel can be disposed of in a manner that provides adequate protection to the public health, safety, and the environment.

(b) The policy under subsection (a) shall provide for—

(1) the establishment of a federally owned and operated program for the siting, development, construction, and operation of repositories capable of safely disposing of solidified high-level radioactive waste and spent fuel, which repositories are to be licensed by the Commission;

(2) a national schedule for accomplishing the regulatory and programmatic actions needed to achieve the objective of obtaining by December 41, 1989, a Commission authorization to construct the first full-scale, operational repository capable of safely disposing of solidified high-level radioactive waste and spent fuel, and achievement of operational staus for the repository as soon thereafter as possible; and

(3) the development, construction, and operation of at least one test and evaluation facility for the purpose of developing the packaging, handling, and emplacement technology for solidified high-level radioactive waste and spent fuel needed to further the demonstration of disposal of such waste and spent fuel, with the objective of achieving operational status of one such facility by January 1, 1988.

DEVELOPMENT OF EPA STANDARDS AND NRC TECHNICAL CRITERIA

SEC. 402. (a) EPA STANDARDS.—Not later than January 1, 1982, the Administrator of the Environmental Protection Agency, pursuant to authority under existing law, shall, by rule, propose generally applicable standards for offsite releases of radioactivity from repositories capable of disposing of solidified high-level radioactive waste and spent fuel. Promulgation of these standards shall occur within a period not greater than one year after proposal.

(b) NRC TECHNICAL CRITERIA.—Not later than January 1, 1984, the Commission, pursuant to authority under existing law, shall, by rule, promulgate technical criteria for review of an application—

(1) for authority to construct a repository capable of disposing of solidified high-level radioactive waste and spent fuel, or

(2) for a license to emplace such waste and spent fuel in the repository.

Such criteria shall provide for the use of a system of multiple barriers in the design of the repository and shall include such restrictions on the retrievability of the solidified high-level radioactive waste and spent fuel emplaced in the repository as the Commission deems appropriate.

IDENTIFICATION OF SITES FOR REPOSITORIES

SEC. 403. (a) GUIDELINES FOR REPOSITORY SITE RECOMMENDATION.—Not later than one hundred and twenty days after the date of enactment of this Act, the Secretary, in consultation with the Environmental Protection Agency, and the United States Geological Survey, and with the concurrence of the Commission, shall issue general guidelines for the recommendation of sites for repositories capable of safely disposing of solidified high-level radioactive waste and spent fuel. The guidelines shall specify factors that would qualify or disqualify a site from development as a repository, including factors pertaining to geologic criteria, the location of valuable natural resources, proximity to population, hydrology, geophysics, seismic activity, and atomic energy defense activities. The guidelines shall require the Secretary to consider the various geologic media in which sites for repositories may be located and, to the extent practicable considering the schedule of actions contained in this title, to recommend sites in different geologic media. The guidelines also shall require the Secretary to consider the cost and impact of transporting to the respository site the solidified high level radioactive waste and spent fuel to be disposed of in the respository and the advantages of regional distribution in the siting of repositories. The Secretary shall use the guidelines established under this subsection in considering sites to be recommended under subsection (b).

(b) SITE RECOMMENDATIONS BY THE SECRETARY.—

(1) Not later than January 1, 1984, the Secretary shall identify and recommend to the President at least three sites that the Secretary determines are suitable for site characterization for the selection of the first repository. Not later than January 1, 1987, the Secretary shall identify and recommend to the President at least three additional sites, which the Secretary determines are suitable for site characterization for possible subsequent selection as repository sites. The Secretary shall not recommend for characterization any area of a site used for the test and evaluation facility pursuant to section 407 that the Secretary determines would permit the physical integration of the test and evaluation facility and a proposed repository. Each recommendation of a site shall include a detailed statement of the basis for the recommendation and shall consider the environmental suitability of the site for the potential location of the repository. If the Secretary recommends a site to the President, the Secretary shall notify the Governor of the State in which the site is located and the Tribal Council of any affected Indian tribe of the Secretary's recommendation and the basis for such recommendation.

(2) Before recommending to the President any site for characterization, the Secretary shall notify the Governor of the State in which the site is located and the Tribal Council of any affected Indian tribe of the proposed recommendation, and the Secretary shall hold public meetings in the vicinity of the site to inform the residents of the area in which the site is located of the proposed recommendation and to receive their comments.

(c) PRESIDENTIAL REVIEW OF RECOMMENDED SITES.—

(1) The President shall review each site recommendation of the Secretary under subsection (b). Within sixty days after the submission of each recommendation for a site, the President in his discretion shall either approve or disapprove the site, and transmit his decision to the Secretary, to the Governor of the State in which each site is located, and to the Tribal Council of any affected Indian tribe. If the President disapproves any site, the Secretary shall make another site recommendation within sixty days after the President's disapproval. If the President fails to approve or disapprove any site in accordance with this paragraph during such sixty-day period, or within such period fails to invoke his authority under paragraph (2) to delay the determination, the site shall be considered to be approved.

(2) The President may delay for not more than six months his decision under paragraph (1) to approve or disapprove a site upon determining that the information provided with the recommendation is not sufficient to permit a decision within the sixty-day period referred to in paragraph (1). The President may invoke his authority under this paragraph by submitting written notice to the Congress, within such period, of his intent to utilize the authority provided under this paragraph. If the President invokes this authority under this paragraph but fails to approve or disapprove the site at the end of such six-month period, the site shall be considered to be approved.

(d) Any activity of the President or the Secretary under this section shall be considered a preliminary decisionmaking activity and shall not be subject to the National Environmental Policy Act of 1969 (83 Stat. 852).

(e) In any request to the Congress for the appropriation of funds to carry out this section, the Secretary shall include, with respect to each geologic medium in which sites for repositories may be located, an estimate of the cost of preparing a site for site characterization.

SITE CHARACTERIZATION

SEC. 404. (a) The Secretary shall carry out in accordance with this section appropriate site characterization activities at each site approved under section 403. Site characterization activities shall be subject to the National Environmental Policy Act of 1969 (83 Stat. 852) only in the manner described in subsection (b)(1)(A) below.

(b)(1) Before proceeding to sink shafts at any site, the Secretary shall submit for such site to the Commission, to the Governor of the State in which the site is located, and to the Tribal Council of any affected Indian tribe, for their review and command—

(A) an environmental assessment prepared pursuant to the Secretary's regulations implementing the National Environmental Policy Act of 1969 (83 Stat. 852) of the site characterization activities planned for such site, and a discussion of alternative activities for purposes of site characterization which may be undertaken to minimize such impacts;

(B) a general plan for site characterization activities to be conducted at such site, which plan shall include—

(i) a description of the site;

(ii) a description of the site characterization activities, including the extent of planned excavations, plans for any onsite testing of radioactive material or nonradioactive material, investigation activities that may affect the ability of the site to isolate any solidified high-level radioactive waste and spent fuel, and provisons to control likely adverse, safety-related impacts from site characterization activities;

(iii) plans for decontaminating and decommissioning the site if it is determined unsuitable for application for licensing as a repository and if any radioactive materials are used for site characterization; and

(iv) any other information required by the Commission; and

(C) proposals describing the possible form of packaging for the solidified high-level radioactive waste and spent fuel that would be emplaced in the repository.

(2) The Secretary shall consider fully the comments received pursuant to paragraph (1) and shall, to the maximum extent practicable, and in consultation with the Governor of the State and the Tribal Council of any affected Indian tribe pursuant to title VII conduct site characterization activities in a manner to minimize any significant adverse environmental impacts identifed in the environmental assessment under paragraph (1) and the comments received pursuant to paragraph (1): *Provided*, That the Secretary shall have no authority under this section to conduct any activities at the

site which were not considered pursuant to paragraph (1), unless any requirement for an environmental impact statement pursuant to the National Environmental Policy Act of 1969, including, but not limited to, a final environmental impact statement for a repository pursuant to subsection 405(a) has been complied with.

(3) During the conduct of site characterization activities at a site, the Secretary shall report to the Commission, to the Governor of the State in which the site is located, and to the Tribal Council of any affected Indian tribe, on the nature and extent of such activites and the information developed from such activities.

(c) The Secretary, in consultation with the Commission, shall conduct such tests, and may conduct such research and development activities, as may be required to provide the necessary data for an application for a construction authorization by the Commission for a repository at the site and for the compliance with the National Environmental Policy Act of 1969 (83 Stat. 852). The Secretary shall report to the Commission and to the Governor of the State in which the site is located and to the Tribal Council of any affected Indian tribe under title VII, on the tests conducted at a site pursuant to this subsection and on the information developed from such tests.

(d)(1) In conducting site characterization activities or tests pursuant to subsection (c)—

(A) the Secretary may use such radioactive materials at a site as the Secretary and the Commission deem necessary to provide data for the submission of an application for a construction authorization for a repository at the site;

(B) if radioactive materials are placed in a site, the Secretary shall limit the amount of radioactive materials to that quantity necessary to determine the suitability of the site for a repository and to provide data for the submission of an application for a construction authorization for a repository at the site; and

(C) any radioactive material used or placed on a site shall be fully retrievable.

(2) If characterization activities are terminated at a site for any reason, the Secretary shall remove any solidified high-level radioactive waste or spent fuel, or other radioactive materials at or in the site as promptly as practicable.

SITE APPROVAL AND CONSTRUCTION AUTHORIZATIONS

SEC. 405. (a) The Secretary shall recommend to the President not later than January 1, 1986, that the President approve one of the three initially characterized sites for the development of the first repository. The Secretary shall recommend to the President not later than January 1, 1989, that the President approve one or more additional sites from all of the characterized sites for the development of subsequent repositories. In making subsequent site recommendations and approvals, the Secretary and the President, respectively, shall consider the need for regional distribution of repositories and the need to minimize, to the extent practicable, the impacts and cost of transporting spent fuel and solidified high-level radioactive waste. Prior to submitting each recommendation to the President for approval of a site, the Secretary shall hold public meetings in the vicinity of the site to inform the residents of the area in which the site is located of the determination of the Secretary and to receive their comments. Any recommendation made by the Secretary pursuant to this subsection shall be considered a major Federal action significantly affecting the quality of the human environment for purposes of the National Environmental Policy Act of 1969 (83 Stat. 852). A final environmental impact statement prepared pursuant to the National Environmental Policy Act of 1969 (83 Stat. 852), prepared by the Secretary, shall accompany the recommendation to the President to approve the site for a repository. With respect to the requirements imposed by the National Environmental Policy Act of 1969 (83 Stat. 852), this Act shall be deemed adequate consideration of the need for a repository, the time of the initial availability of a repository, and all alternatives to a repository for the isolation of spent fuel and solidified high-level radioactive waste, and no further consideration of such matters shall be required. The Secretary shall only consider as alternate sites for the first proposed facility these sites recommended by January 1, 1984, by the Secretary pursuant to section 403(b) and approved by the President for site characterization pursuant to section 403(c). The Secretary shall only consider as alternate sites for subsequent proposed facilities those sites recommended by the Secretary by January 1, 1984, and by January 1, 1987, pursuant to section 403(b) and approved by the President for site characterization pursuant to section 403(c). Preparation of the final environmental impact statement by the Secretary in accordance with this subsection, with coordination and comments by the Commission and other interested agencies, shall satisfy the requirements of the National Environmental Policy Act of 1969 (83 Stat. 852) with regard to the selection of a site for, and the decision of the Secretary to construct and operate a repository: *Provided*, That this subsection shall not be construed in any way as amending the National Environmental Policy Act of 1969 (83 Stat. 852).

(b) The President shall approve or disapprove any recommendation of the Secretary pursuant to subsection (a) within sixty days after the recommendation is submitted. If the President disapproves any recommendation, the Secretary shall make another recommendation from among the characterized sites within sixty days after the President's disapproval.

(c) The Secretary shall submit to the Commission an application for authorization to construct a repository at each site approved by the President within one-hundred and twenty days after the date on which the President approves a site under subsection (b). The Secretary shall provide a copy of such license application to the Governor of the State in which the site is located and to the Tribal Council of any affected Indian tribe.

(d) Not later than eighteen months after the date on which an application is submitted under subsection (c), the Commission shall submit to the Congress a report describing the proceedings on the application undertaken through such date, including a description of—

(1) major unresolved safety issues, and the Secretary's explanation of design and operation plans for resolving such issues;

(2) matters of contention regarding the application; and

(3) any Commission actions regarding the granting or denial of the application.

(e) The Commission shall consider an application for authorization to construct a repository in accordance with the laws applicable to such applications, except that the Commission shall issue a final decision approving or disapproving the first such application not later than December 31, 1989, and the second such application not later than December 31, 1992. The Commission decision approving the first such application shall prohibit the emplacement in the first repository of a quantity of spent fuel containing in excess of seventy thousand metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of such a quantity of spent fuel until such time as a second repository is in operation. In the event that a monitored retrievable storage facility, approved pursuant to title V of this Act, shall be located, or is planned to be located, within fifty miles of the first repository, then the Commission decision approving the first such application shall prohibit the emplacement of a quantity of spent fuel containing in excess of seventy thousand metric tons of heavy metal or a quantity of solidified high-level radioactive waste resulting from the reprocessing of spent fuel in both the repository and monitored retrievable storage facility until such time as a second repository is in operation.

(f) The Commission shall consider an application for authorization to construct a repository in accordance with the laws applicable to such applications, except that—

(1) the Commission shall only consider as alternate sites for the first proposed facility those sites recommended by January 1, 1984, by the Secretary pursuant to section 403(b) and approved by the President for site characterization pursuant to section 403(c).

(2) the Commission shall only consider as alternate sites for subsequent proposed facilities those sites recommended by the Secretary by January 1, 1984, and by January 1, 1987, pursuant to section 403(b) and approved by the President for site characterization pursuant to section 403(c), and

(3) the Commission shall rely on the environmental impact statement prepared by the Secretary pursuant to subsection 405(a) in issuing a final decision approving or disapproving the application to the extent possible, consistent with the independent responsibilities of the Commission as determined by the Commission, in order to minimize unnecessary duplication.

SEC. 406. The Secretary, the Commission, and other appropriate Federal officials shall take such actions as they consider necessary, consistent with the protection of the public health, safety, and the environmental, to achieve operational status of a repository licensed under section 405(e) as soon thereafter as possible.

TEST AND EVALUATION FACILITY

SEC. 407. (a) Not later than January 1, 1983, the Secretary shall transmit to the Congress a proposal for at least one test and evaluation facility for the purpose of developing generically applicable packaging, handling, and emplacement technology for solidified high-level radioactive waste and spent fuel to further the demonstration of disposal of such waste and spent fuel. The proposal shall include site-specific designs, specification, and cost estimates adequate to solicit bids for the construction of an initial facility, and a schedule for the construction of a facility, consistent with the objective of achieving facility operation not later than January 1, 1988. The proposal shall also include a detailed plan, schedule, and termination date for the generically applicable research and development activities proposed to be conducted at the test and evaluation facility.

(b) The Secretary may select an existing research development site for the development of the test and evaluation facility. The Secretary shall not select any area of a site that the Secretary intends to recommend for characterization pursuant to section 403(b) that the Secretary determines would permit the physical integration of the test

and evaluation facility and a proposed repository.

(c) The facility shall be designed to—

(1) accept a total of not more than three hundred packages of solidified high-level radioactive waste and spent fuel;

(2) permit continuous monitoring, management, and maintenance of the solidified high-level radioactive waste and spent fuel to be emplaced in the facility;

(3) accept waste and spent fuel packages incorporating multiple barrier design; and

(4) permit full retrievability of the waste and spent fuel to be emplaced in the facility.

(d) In formulating the proposal, the Secretary shall consult with the Commission and the Environmental Protection Agency, and shall transmit their comments on the final proposal to the Congress together with the proposal.

(e)(1) Preparation and transmittal of the proposal to the Congress is not a major Federal action significantly affecting the quality of the human environment within the meaning of section 102(2)(C) of the National Environmental Policy Act of 1969 (83 Stat. 852), but an environmental assessment prepared pursuant to the Secretary's regulations implementing the National Environmental Policy Act of 1969 (83 Stat. 852) shall be prepared on the proposal to accompany such transmittal.

(2) When Congress authorizes construction of the facility, the requirements of the National Environmental Policy Act shall apply, except that any environmental impact statement in connection with such facility need not consider the need for such facility or any alternative to the design criteria set forth in subsection (b), as they may have been amended by such subsequent congressional authorization.

(f) Notwithstanding any other provision of law, the test and evaluation facility authorized under this section shall not be subject to a license by the Commission: *Provided, however,* That the Secretary shall obtain the concurrence of the Commission in the siting, design, construction, and operation of the facility.

(g) The Secretary shall provide for participation of an affected State and any affected Indian tribe under subsections 701 (b), (c), (d), and (e) of title VII in any test and evaluation facility authorized by the Congress under this section: *Provided,* That this subsection shall not apply to any existing research and development site unless it is authorized as a test and evaluation facility and expanded significantly with regard to its extent or the number of packages of solidified high-level radioactive waste and spent fuel.

NATIONAL SITE SURVEY PROGRAM

SEC. 408. (a) The Secretary and the United States Geological Survey shall conduct a national site survey program, to be completed not later than January 1, 1986, for the purpose of identifying sites that may be suitable for site characterization for a repository in addition to those recommended by the Secretary under section 403(b).

(b) The national site survey program established by subsection (a) shall include every State that may contain acceptable sites for a repository. No State shall have the authority to prohibit or restrict any activity that the Secretary and the Director of the United States Geological Survey deem necessary to carry out the purposes of this section.

(c) The Secretary shall use the results of the national site survey program established by subsection (a) in identifying and recommending sites for characterization for possible subsequent selection as repository sites under section 403(b).

SEC. 409. (a) The Secretary shall continue and accelerate a program of research, development, and investigation of alternative means and technologies for the permanent disposal of high-level radioactive waste from civilian nuclear activities and Federal research and development activities. Such program shall include examination of various waste disposal options.

(b) Notwithstanding any other provision of this Act or any other law, no license or other approval shall be given by any Federal department, agency, or other instrumentality, or the President of the United States, for the disposal of low-level nuclear waste, including contaminated materials in the oceans until the Environmental Protection Agency reports to the Congress on the adverse effects of such disposal on the marine environment as compared with the adverse effects of land disposal, and Congress authorizes such disposal; or unless the Environmental Protection Agency determines that the proposed disposal is only for purposes of research on the effects of low-level radiation on the marine environment.

SEC. 410. The Secretary consistent with the policy set forth in section 401, is authorized and directed to enter into contracts with persons owning and operating civilian nuclear powerplants, and with persons owning spent fuel or high-level radioactive waste generated be civilian nuclear activities prior to the date of enactment of this Act.

(1) The contracts entered into under subsection (a) shall provide that in return for the payment of the fees established by section 603 (a) and (c) of this Act, the Federal Government will reasonably undertake to perform the duties required of it under this Act and shall no later than December 31, 1998—

(A) take title to the spent fuel and high-level radioactive waste owned or generated by such person,

(B) transport the spent fuel or high-level radioactive waste to a federally owned and operated respository or monitored, retrievable storage facility, and

(C) store or dispose of the spent fuel or high-level radioactive waste.

(2) Any person with whom the Secretary has contracted under this section may bring an action in the United States Court of Claims for damages arising out of a failure to meet the contractural obligations specified in paragraph (1) unless the Government can show that its failure to meet such contractural obligations was directly caused by considerations of safety and not caused by Government delay. The Court of Claims may not award damages under this paragraph to any person in excess of the total amount that person has paid in fees pursuant to section 603.

(c) The contracts entered into under subsection (a) shall also provide for the retention by the owner of spent fuel of a nontransferable right to the value of the remaining fuel resource less the costs of recovery, as determined at the time of recovery. The right ends when the Federal Government—

(1) takes actions resulting in the recovery of the remaining fuel resource and gives to the owner of the right an amount of money equal to the value of the recovered fuel less the costs of recovery; or

(2) disposes of such fuel in a repository.

SEC. 411. Not later than January 1, 1983, the Secretary shall prepare and submit to the Senate and the House of Representatives a detailed management plan for the actions required by this title. The plan shall identify the major program objectives, milestones, decisions and critical path items that are required to achieve the objectives set forth in this title. The President shall submit with such plan an evaluation of a plan to establish an independent establishment in the executive branch to manage repositories and temporary storage sites. Such plan shall include provisions specifying the composition of the managing body of such establishment and the responsibilities and powers of such body.

TITLE V—LONG-TERM STORAGE OF SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL FROM CIVILIAN NUCLEAR ACTIVITIES

SEC. 501. It is the policy of the Federal Government that—

(1) the Federal Government has the responsibility to provide for long-term storage of solidified high-level radioactive waste and spent fuel, consistent with the policies of title III and title IV;

(2) the executive branch and the Congress should proceed as expeditiously as possible to consider fully a proposal for the construction of one or more monitored, retrievable storage facilities to provide such long-term storage; and

(3) the Federal Government has the responsibility to assure that such facilities are available with sufficient capacity when needed.

SEC. 502. Within one year after the date of enactment of this Act, the Secretary shall transmit to the Congress a proposal for the consideration of one or more monitored, retrievable storage facilities for spent fuel and solidified high-level radioactive waste. Such facilities shall be designed to—

(a) accommodate spent fuel without reprocessing, as well as solidified high-level radioactive waste, including solidified high-level radioactive waste from reprocessing of such spent fuel if such reprocessing is undertaken in the United States;

(b) permit continuous monitoring, management, and maintenance of the spent fuel and solidified high-level radioactive waste for the foreseeable future;

(c) provide for the ready retrieval of any spent fuel and solidified high-level radioactive waste for further processing or disposal by an alternative method; and

(d) safely contain such solidified high-level radioactive waste and spent fuel so long as may be necessary, by means of maintenance, including, but not limited to, replacement as necessary, of such facility.

SEC. 503. The proposal shall include—

(a) the establishment of a Federal program for the siting, development, construction, and operation of facilities capable of safely storing solidified high-level radioactive waste and spent fuel, which facilities are to be licensed by the Commission;

(b) site-specific designs, specifications, and cost estimates adequate to solicit bids for the construction of an initial facility which will support authorization to construct the first full-scale, operational facility capable of safely storing solidified high-level radioactive waste and spent fuel and achievement of operational status for the facility as soon thereafter as possible;

(c) a plan for integrating the facilities under this title with the interim spent fuel storage facilities authorized by title III and repositories authorized by title IV.

SEC. 504. In formulating the proposal, the Secretary shall consult with the Commission and the Environmental Protection Agency, and shall transmit their comments on the final proposal to the Congress together with the proposal.

SEC. 505. (a) Preparation and transmittal of the proposal to the Congress is not a major Federal action significantly affecting the quality of the human environment within the meaning of section 102(2)(C) of

the National Environmental Policy Act of 1969 (83 Stat. 852), but an environmental assessment prepared pursuant to the Secretary's regulations implementing the National Environmental Policy Act of 1969 (83 Stat. 852) shall be prepared on the proposal to accompany such transmittal based upon available information regarding alternative technologies for storage of spent fuel and solidified high-level radioactive waste storage.

(b) When Congress authorizes construction of the initial facility, the requirements of the National Envornmental Policy Act shall apply, except that any environmental impact statement in connection with such facility shall not consider the need for the facility, alternate sites for the facility, or any alternative to the design criteria set forth in section 502 of this Act as may have been amended by such subsequent congressional authorization.

(c) Any facility authorized under this title shall be subject to a license under section 202(3) of the Energy Reorganization Act of 1974 (88 Stat. 1233), except that in its consideration of the application filed by the Secretary for the initial facility, the Commission may not consider the need for the facility, alternate sites for the facility, or any alternative to the design criteria set forth in section 502 of this Act but shall comply with the requirements of the licensing process as otherwise provided by law.

Sec. 506. (a) Beginning the first fiscal year after the date of the enactment of this Act, the Secretary shall make annual impact aid payments to appropriate units of local government in order to mitigate social or economic impacts occasioned by the construction and subsequent operation of any facility within the jurisdictional boundaries of such local governments and authorized under this title.

(b) Payments made available to units of local government under this section shall be—

(1) allocated in a fair and equitable manner with a priority to those units of local government suffering the most severe impacts; and

(2) utilized by units of local governments only for (A) planning, (B) construction and maintenance of public services, and (C) provision of public services related to the siting of a facility authorized under this title.

(c) Payments shall be subject to such terms and conditions as the Secretary determines necessary to ensure that the purposes of this section will be achieved. The Secretary shall issue such regulations as may be necessary to carry out the provisions of this section.

(d) Payments under this section shall be made available solely from the fund established under section 601 of this Act and shall be available only to the extent provided in advance in appropriations Acts.

(e) The Secretary may consult with appropriate units of local government in advance of commencement of construction of any facility authorized under this title in an effort to determine the level of the payments such government would be eligible to receive under this section.

(f) As used in this section, the term "unit of local government" means a county, parish, township, municipality, or borough, including a borough in the State of Alaska, existing on the date of the enactment of this subsection, or other unit of government below the State which is a unit of general government as determined by the Secretary.

TITLE VI—FINANCIAL ARRANGEMENTS

Sec. 601. (a) There is hereby established in the Treasury of the United States a separate account to provide for costs directly related to (1) the acquisition, lease or construction, and operation of Federal away-from-reactor interim storage facilities for spent fuel in accordance with title III of this Act; (2) the development, including site selection and characterization, construction and operation of repositories for the disposal of such spent fuel or solidified high-level radioactive waste in accordance with title IV of this Act; (3) the development, including site selection, construction and operation of one or more test and evaluation facilities in accordance with title IV of this Act; (4) the development, including site selection construction and operation of facilities for the long-term storage of spent fuel or solidified high-level radioactive waste in accordance with title V of this Act; (5) the related handling and transportation of such spent fuel or waste; (6) assistance under sections 506 and 701(c); and (7) research, development and investigation activities of the Secretary required to support the activities described in items (1) through (5). Amounts appropriated under section 307 or otherwise appropriated to the Secretary to carry out any of the purposes of titles III, IV, V, and VI of this Act, all charges under section 303, receipts derived from the sale of any reprocessed fuel, all fees collected under section 603, and the proceeds from any obligations issued pursuant to section 602 of this title shall be deposited into the account.

(b) To the extent funds are available and in such amounts as are provided in appropriations Acts, the Secretary may draw of such account to carry out the purposes on titles III, IV, V, and VI of this Act: *Provided*, That the Secretary shall not construct or acquire any facility authorized under this Act unless the specific expenditure of funds for the initiation of such construction or acquisition is explicitly approved in an appropriation Act.

Sec. 602. (a) To carry out the purposes of this Act the Secretary may borrow money from the Treasury of the United States in amounts provided in appropriation Acts. The Secretary and the Secretary of the Treasury shall agree on terms, maturities, and conditions of the obligations, but the maturities may not be more than thirty years. The Secretary may redeem the obligations before maturity. The Secretary of the Treasury shall decide the interest rate of the obligations considering the average market of outstanding marketable obligations of the United States Government of comparable maturities during the month before the obligations are issued. The interest payments on such obligations may be deferred with the approval of the Secretary of the Treasury but any interest payment so deferred shall bear interest. Such obligations shall be issued in amounts and at prices approved by the Secretary of the Treasury. The Secretary of the Treasury shall purchase any obligations of the Secretary issued under this section and for this purpose the Secretary of the Treasury is authorized to use as a public debt transaction of the United States the proceeds from the sale of any securities issued under the Second Liberty Loan Bond Act. Securities may be issued under that Act to purchase obligations from the Secretary under this section.

(b) Appropriations made available pursuant to section 307 of this Act and any other appropriations made to the Secretary to carry out the purposes of titles III, IV, V, and VI of this Act shall be repaid into the general fund of the Treasury out of the account, together with interest until the date of repayment at a rate determined by the Secretary of the Treasury taking into consideration the average market on long-term obligations of the United States during the fiscal year in which appropriations are made. The Secretary shall repay such appropriation together with interest within thirty years from the time at which such appropriations become available for expenditure after the date of enactment of this Act, and no appropriations to the Secretary are authorized to carry out the purposes of titles III, IV, V, and VI of this Act unless the amounts appropriated are deposited into the account established in section 601(a).

(c) The Secretary shall invest in United States Treasury instruments any surplus funds accruing in the account established by section 601 herein and the interest paid on such Treasury instruments shall accure to the benefit of such account.

Sec. 603. (a) There is hereby imposed a mandatory fee in the amount of 1.0 mil per kilowatt-hour on electricity generated by civilian nuclear powerplants and sold on or after the date ninety days after the date of enactment of this Act. Such fee shall be for the purpose of paying the costs to be incurred by the Federal Government that are specified in section 601(a).

(b) The fee imposed by subsection (a) shall be collected by the person owning and operating each civilian nuclear powerplant and shall be paid to the Treasury of the United States and deposited in the separate account established by section 601. The person owning and operating a civilian nuclear powerplant who pays the fee to the Treasury of the United States pursuant to subsection (a) shall have no further financial obligation to the Federal Government for the long-term storage and permanent disposal of spent fuel, or the solidified high-level radioactive waste from spent fuel, which is removed from the nuclear reactor of such civilian nuclear powerplant after the date of enactment of this Act.

(c) Not later than ninety days after the date of enactment of this Act, the Secretary shall establish a one time fee per kilogram of heavy metal in spent fuel, or in solidified high-level radioactive waste, in an amount equivalent to an average charge of 1.0 mil per kilowatt-hour for electricity generated by such spent fuel, or such solidified high-level waste derived therefrom, to be collected from any person delivering to the Federal Government spent fuel, or solidified high-level radioactive waste derived from spent fuel, which was removed from a civilian nuclear powerplant prior to the enactment of this Act. Such fee shall be for the purpose of paying the costs to be incurred by the Federal Government for the long-term storage and permanent disposal of solidified high-level radioactive waste and spent fuel from civilian nuclear activities. Such fee shall be paid to the Treasury of the United States and shall be deposited in the separate account established by section 601. In paying such a fee, the person delivering spent fuel, or solidified high-level radioactive wastes derived therefrom, to the Federal Government shall have no further financial obligation to the Federal Government for the long-term storage and permanent disposal of such spent fuel, or the solidified high-level radioactive waste derived therefrom.

(d) Not later than one hundred and eighty days after the date of enactment of this Act, the Secretary shall establish procedures for the collection and payment of the fees established by subsection (a) and subsection (c). The Secretary shall annually review the amount of the fees established by subsections (a) and (c) above to evaluate whether collection of the fee will provide sufficient revenues to offset the costs as defined in

subsection (a) herein. In the event the Secretary determines that either insufficient or excess revenues are being collected, in order to recover the costs incurred by the Federal Government that are specified in section 601(a), the Secretary shall propose an adjustment to insure full cost recovery. The Secretary shall immediately transmit this proposal for such an adjustment to Congress. The adjusted fee proposed by the Secretary shall be effective after a period of ninety days of continuous session have elapsed following the receipt of such transmittal unless during such ninety-day period either House of Congress adopts a resolution disapproving the Secretary's proposed adjustment in accordance with the procedures set forth for congressional review of an energy action under section 551 of the Energy Policy and Conservation Act.

(e) In computing the cost incurred by the Federal Government under the preceding subsection, the Secretary shall include as cost the interest paid by the Federal Government upon the unrecovered capital cost, based upon a fifty-year period of amortization and a rate of interest equal to the average rate paid by the Federal Government on Treasury instruments for the immediately preceding twelve-month period.

(f) Funds paid to the Treasury of the United States from the collection of the fees imposed by subsections (a) and (c) above and deposited in the separate account established by section 601 shall be available to pay the direct costs of constructing and operating any away-from-reactor facility pursuant to section 305 that would not otherwise be paid by the one-time payments collected pursuant to section 303 and deposited in the separate account established by section 601.

TITLE VII—STATE PARTICIPATION IN THE DEVELOPMENT OF REPOSITORIES AND MONITORED, RETRIEVABLE STORAGE FACILITIES FOR SOLIDIFIED HIGH-LEVEL RADIOACTIVE WASTE AND SPENT FUEL

Sec. 701. (a) The Secretary shall identify the States with one or more potentially acceptable sites for a repository or for a monitored, retrievable storage facility for solidified high-level radioactive waste or spent fuel within ninety days after the date of enactment of this Act. Within ninety days of such identification, the Secretary shall notify the Governor, the State legislature, and the Tribal Council of any affected Indian tribe in any affected State of the potentially acceptable sites within such State. For the purposes of this title, the term "potentially acceptable site" means any site at which, after geologic studies and field mapping but before detailed geologic data gathering, the Department undertakes preliminary drilling and geophysical testing for the definition of site location.

(b) Each affected State and affected Indian tribe notified under subsection (a) as having potentially acceptable sites shall have the right to participate in a process of consultation and concurrence, based on public health and safety and environmental concerns, in all stages of the planning, siting, development, construction, operation, and closure of a repository or a monitored retrievable storage facility that is required to be licensed by the Commission. Upon (1) the approval of a site for site characterization for such a repository, (2) the designation of a site for such a monitored retrievable storage facility, or (3) the written request of the State or Indian tribe in any affected State notified under subsection (a) to the Secretary, whichever, first occurs, the Secretary shall promptly enter into negotiations with each such State and Indian tribe to establish a cooperative agreement under which the State or Indian tribe may exercise such right. Public participation in the negotiation of such agreement shall be provided for and encouraged by the Secretary, the States and the Indian tribes. The Secretary, in cooperation with the States and Indian tribes, shall develop and publish minimum guidelines for public participation in such negotiations, but the adequacy of such guidelines or any failure to comply with these guidelines shall not be a basis for judicial review.

(c) The cooperative agreement shall include, but need not be limited to, the sharing in accordance with applicable law of all technical and licensing information, the utilization of available expertise, the facilitating of permitting procedures, joint project review, and the formulation of joint surveillance and monitoring arrangements to carry out applicable Federal and State laws. The cooperative agreement also shall include a detailed plan or schedule of milestones, decision points and opportunities for State or tribal review and objection. Such cooperative agreement shall provide procedures for negotiating and resolving objections of the State or Indian tribe in any stage of the planning, siting, development, construction, operation, or closure of such a facility within the State. In the case of a proposed repository, the cooperative agreement shall also provide for compensation to the State or Indian tribe for (1) the cost of State or Indian tribe participation in the development of the facility, including the acquisition of any necessary independent technical and licensing information, and (2) impacts caused by the siting, development, construction, and operation of a repository. Further, the cooperative agreement in the case of a proposed repository shall provide a method for determining the appropriateness and amount of any royalty or assessment to the State or Indian tribe for the use of its property, location or other natural resource. Payments for any compensation, royalty or assessment to a State or Indian tribe pursuant to a cooperative agreement shall be made only to the extent provided in appropriations Acts and shall be made solely from the fund established under section 601. The terms of any cooperative agreement shall not affect the Nuclear Regulatory Commission's authority under existing law.

(d) For the purpose of this part of this title, "process of consultation and concurrence" means a methodology by which the Secretary (A) keeps the State or affected Indian tribe fully and currently informed about the aspects of the project related to any potential impact on the public health and safety, (B) solicits, receives, and evaluates concerns and objections of the State or affected Indian tribe with regard to such aspects of the project on an ongoing basis, and (C) works diligently and cooperatively to resolve, through arbitration or other appropriate mechanisms, such concerns and objections. The process of consultation and concurrence shall not include the grant of a right to any State or Indian tribe to exercise an absoute veto of any aspect of the planning, siting, development, construction, and operation of the project.

(e) The Secretary and the State or affected Indian tribe shall seek to conclude the agreement required by subsection (b) not later than one year after the date of notification under section (a). The Secretary shall report to the Congress annually thereafter on the status of the agreement approved under subsection (c). Any report to the Congress on the status of negotiations under subsection (b) of the agreement under subsection (c) by the Secretary shall be accompanied by comments solicited by the Secretary from the State or affected Indian tribe.

(f)(1) The Secretary shall notify the Governor, the State legislature, and the Tribal Council of any affected Indian tribe in an affected State at least ninety days prior to submitting an application to the Commission for authorization to construct a repository or monitored, retrievable storage facility of the Secretary's intention to file such application.

(2) If at any time after the Governor or an affected Indian tribe has received the notice required under paragraph (1), but no later than ninety days after receipt of such notice, the Governor or the Indian tribe notifies the Secretary in writing of objections to the proposed repository or monitored, retrievable storage facility, the Secretary shall promptly transmit such objections together with the Secretary's comments and recommendations to the Congress.

(3) If the Governor or the Indian tribe has filed objections in accordance with paragraph (2), the Secretary shall not submit such an application and shall suspend further site-specific activities on the proposed repository or monitored, retrievable storage facility if during the sixty-day period of continuous session following submittal to Congress of the objections, either House of Congress passes a resolution pursuant to section 703 stating in substance that the proposal for the repository or monitored, retrievable storage facility does not sufficiently address State or tribal concerns to permit the Secretary to apply to the Commission for an authorization to construct the facility.

Sec. 702. (a) For the purpose of this Act (1) continuity of session is broken only by an adjournment of Congress sine die; and (2) the days on which either House is not in session because of an adjournment of more than three days to a day certain are excluded in the computation of any period of time in which Congress is in continuous session.

(b) Sections 702 through 706 of this Act are enacted by Congress (1) as an exercise of the rulemaking power of the Senate and the House of Representatives, respectively, and as such they are deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of resolutions described by section 703 of this Act; and they supersede other rules only to the extent that they are inconsistent therewith; and (2) with full recognition of the constitutional right of either House to change the rules (so far as relating to the procedure of that House) at any time, in the same manner and to the same extent as in the case of any other rule of that House.

Sec. 703. For the purposes of this Act "resolution" means only a resolution of either House of Congress, the matter after the resolving clause of which is as follows: "That the believes that the proposed development of a repository or monitored, retrivable storage facility at within the State of , which is the basis of objections transmitted to Congress by the Secretary of Energy on , 19 does not sufficiently address State or tribal concerns to permit the Secretary to apply to the Nuclear Regulatory Commission for an authorization to construct such repository or monitored, retrievable storage facility, the blank spaces therein being appropriately filled.

Sec. 704. (a) No later than the first day of session following the day on which objections by a State or Indian tribe are transmitted to the House of Representatives and the Senate under section 601(f), a resolution, as defined in section 703, shall be in-

troduced (by request) in the House by the chairman of the committee to which the report is referred, or by a Member or Members of the House designated by such chairman; and shall be introduced (by request) in the Senate by the chairman of the committee to which the report is referred, or by a Member or Members of the Senate designated by such chairman.

(b) A resolution with respect to a proposed facility which is the basis of such objections shall be referred to the appropriate committees of the House and Senate (and all resolutions with respect to the same report shall be referred to the same committee) by the President of the Senate or the Speaker of the House of Representatives, as the case may be. The committee shall make its recommendations to the House of Representatives or the Senate, respectively, within forty-five calendar days of continuous session of Congress following the date of such resolution's introduction.

SEC. 705. If the committee to which is referred a resolution introduced pursuant to subsection (a) of section 704 (or, in the absense of such a resolution, the first resolution introduced with respect to the proposed facility which is the basis of such objections,) has not reported such resolution or identical resolution at the end of forty-five calendar days of continuous session of Congress after its introduction, such committee shall be deemed to be discharged from further consideration of such resolution and such resolution shall be placed on the appropriate calendar of the House involved.

SEC. 706. (a) When the committee has reported, or has been deemed to be discharged (under section 705) from further consideration of, a resolution described in section 705, it is at any time thereafter in order (even though a previous motion to the same effect has been disagreed to) for any Member of the respective House to move to proceed to the consideration of the resolution. The motion is highly privileged and is not debatable. The motion shall not be subject to amendment, or to a motion to postpone, or a motion to proceed to the consideration of other business. A motion to reconsider the vote by which the motion is agreed to or disagreed to shall not be in order. If a motion to proceed to the consideration of the resolution is agreed to, the resolution shall remain the unfinished business of the respective House until disposed of.

(b) Debate on the resolution, and on all debatable motions and appeals in connection therewith, shall be limited to not more than ten hours, which shall be divided equally between individuals favoring and individuals opposing the resolution. A motion further to limit debate is in order and not debatable. An amendment to, or a motion to postpone, or a motion to proceed to the consideration of other business, or a motion to recommit the resolution is not in order. A motion to reconsider the vote by which the resolution is agreed to or disagreed to shall not be in order.

(c) Immediately following the conclusion of the debate on the resolution with respect to the proposed facility which is the basis of such objections, and a single quorum call at the conclusion of the debate if requested in accordance with the rules of the appropriate House, the vote on final approval of the resolution shall occur.

(d) Appeals from the decisions of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedure relating to a resolution with respect to the proposed facility which is the basis of such objections, shall be decided without debate.

SEC. 707. In considering any objections by a State or Indian tribe submitted to the Congress pursuant to this title, the Congress may obtain the views and comments on the Nuclear Regulatory Commission on such objections. The provision of views by the Commission shall not be construed as binding the Commission with respect to any licensing action pertaining to the facility which is the subject of such objections.

SEC. 708. (a) Notwithstanding any other provision of law, the provisions of this title shall constitute the exclusive authority for any official of the Federal Government to enter into any agreement with any affected State and any affected Indian tribe (1) for participation in a process of consultation and concurrence in the planning, siting, development, construction, and operation of a repository pursuant to title IV of this Act or a monitored, retrievable storage facility storage facility pursuant to title V of this Act or (2) for any other participatory right in the Secretary's decisions associated with the activities of planning, siting, development, construction and operation of a repository pursuant to title IV of this Act or a monitored, retrievable storage facility pursuant to title V of this Act.

(b) The provisions of this title shall constitute the exclusive rights of participation by an affected State or Indian tribe in the planning, siting, development, construction, and operation of a repository or a monitored, retrievable storage facility that is required to be licensed by the Commission: *Provided, however,* That nothing in this Act shall preclude any recognized right of any State or Indian tribe under existing law with respect to such a repository or monitored, retrievable storage facility.

TITLE VIII—PERMANENT DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE FROM ATOMIC ENERGY DEFENSE ACTIVITIES

SEC. 801. (a) The President, in preparing the report required by section 213 of Public Law 97-90, shall evaluate the use of disposal capacity at one or more of the repositories to be developed pursuant to title IV of this Act for the permanent disposal of high-level radioactive waste resulting from atomic energy defense activities. The evaluation shall take into consideration cost, efficiency, health and safety, regulatory, transportation, public acceptability and national security factors.

(b) Unless the President finds, after conducting the evaluation required by subsection (a), that the development of one or more repositories for high-level radioactive waste from atomic energy defense activities only is required, taking into account all of the factors described in subsection (a), the Secretary shall proceed promptly with arrangements for the use of one or more of the repositories to be developed pursuant to title IV for the permanent disposal of high-level radioactive waste from atomic energy defense activities. Such arrangements shall include the allocation of costs of developing, constructing and operating this repository or repositories between the Federal Government and the separate account established by section 601. The costs resulting from permanent disposal of high-level radioactive waste from atomic energy defense activities shall be paid by the Federal Government, and not from the special account established under section 601.

(c) If the President determines that national security needs require the development of a repository for the disposial of high-level radioactive waste from atomic energy defense activities only, the facility shall (1) comply with the guidelines to be developed pursuant to section 403(a) of this Act, (2) be subject to a license under section 202(4) of the Energy Reorganization Act of 1974 (88 Stat. 1233), and (3) comply with all requirements of the Commission for the siting, development, construction, and operation of a repository.

Mr. STEVENS. Mr. President, I move to reconsider the vote by which the bill was passed.

Mr. ROBERT C. BYRD. I move to lay that motion on the table.

The motion to lay on the table was agreed to.

Mr. McCLURE. Mr. President, I ask unanimous consent that the bill be printed as passed.

The PRESIDING OFFICER. Without objection, it is so ordered.

Mr. STEVENS. Mr. President, I yield to the Senator from Wyoming.

Mr. SIMPSON. Mr. President, as we conclude the debate on this legislation in a very swift manner, I wish to particularly thank Senator BIDEN for his forebearance and patience. At any time he could have intruded in the progress of this legislation, but he chose to exercise restraint and patience. I think that is most appreciated by those of us involved in the floor management of the bill.

I wish to particularly pay thanks to Senator McCLURE and Senator BENNETT JOHNSTON who, indeed, performed a remarkable service and were wholly effective in taking this legislation through three committees and compromising between Armed Services, Environment and Public Works, and Energy and Natural Resources.

In my 3 years here, and only 1 as chairman of the Subcommittee on Nuclear Regulation, this is certainly the closest we have ever come in the years of struggle to put together a fine piece of work. It is a pleasure to be a part of it.

I also appreciate the efforts of the ranking member of the subcommittee, Senator GARY HART, and the chairman of the full committee and the ranking member, Senators STAFFORD and RANDOLPH. I thank the Chair.

(Mr. McCLURE assumed the chair.)

Mr. STEVENS. Mr. President, I join the Senator from Wyoming in commending the managers of the bill, the current occupant of the chair, Senator McCLURE, and Senator JOHNSTON.

I also commend those who were associated with the handling of the Falklands resolution. We realize that we had to deal with the issue, but we did not want to deal with it in a manner that left the wrong impression. It was through the good offices of my friend, the distinguished minority leader, that the matter was substantially revised so that it could be adopted almost unanimously by the Senate.

Mr. ROBERT C. BYRD. Will the Senator yield?

Mr. STEVENS. I do.

Mr. ROBERT C. BYRD. Mr. President, I thank the Senator for his kind remarks. I also wish to associate myself with the remarks he has made

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United States Court of Appeals

FOR THE DISTRICT OF COLUMBIA CIRCUIT

No. 74-1586

NATURAL RESOURCES DEFENSE COUNCIL, INC. AND CONSOLIDATED NATIONAL INTERVENORS, PETITIONERS

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

BALTIMORE GAS AND ELECTRIC CO., ET AL., INTERVENORS

No. 77-1448

NATURAL RESOURCES DEFENSE COUNCIL, INC., PETITIONER

v.

UNITED STATES NUCLEAR REGULATORY COMMISSION AND UNITED STATES OF AMERICA, RESPONDENTS

BALTIMORE GAS AND ELECTRIC COMPANY, ET AL., COMMONWEALTH EDISON COMPANY, PACIFIC LEGAL FOUNDATION, INTERVENORS

Bills of costs must be filed within 14 days after entry of judgment. The court looks with disfavor upon motions to file bills of costs out of time.

Opinion for the Court filed by *Senior Circuit Judge* BAZELON.

Opinion concurring in part and dissenting in part filed by *Circuit Judge* EDWARDS.

Dissenting opinion filed by *Circuit Judge* WILKEY.

PER CURIAM: Judge Bazelon's opinion constitutes the opinion of the court. Judge Edwards concurs in all but Part IV-D of the opinion, and Judge Wilkey concurs in only Part IV-D.

BAZELON, *Senior Circuit Judge*: These consolidated cases involve the continuing efforts of the Nuclear Regulatory Commission (NRC)[1] to establish a system by which to consider and disclose the environmental impact of the uranium fuel cycle in compliance with the National Environmental Policy Act (NEPA).[2] The present controversy centers upon the radiological effluents associated with the "back end" of the fuel cycle: the reprocessing,[3] storage, and "disposal"[4] of spent fuel and other

[1] The Nuclear Regulatory Commission (NRC) was established by the Energy Reorganization Act of 1974, 42 U.S.C. §§ 5801 *et seq.* (1976), to assume the licensing and regulatory functions of the Atomic Energy Commission (AEC). The administrative proceedings challenged in this action began under the AEC and continued under the NRC. Hereinafter both agencies will be referred to as the "Commission" or the "NRC."

[2] 42 U.S.C. § 4332 (1976).

[3] "Reprocessing" is a process by which reusable elements of spent fuel are extracted for recycling and the remaining radioactive wastes are concentrated.

[4] As we stated in our initial opinion in this case, waste "disposal" is a misnomer for what, under currently projected technology, should be termed long-term waste storage. It refers to the last stage of the waste-management process, where wastes are expected to be contained for the tens of thousands of years necessary for them to decay naturally into nontoxic substances. *But see* p. 39 *infra* (other disposal methods under consideration).

wastes. At issue are three versions—the original,[5] interim,[6] and final versions[7]—of the "Table S-3 Rule," which provide a set of numerical values intended to reflect the environmental effects of the uranium fuel cycle.[8] Under the Rule, Table S-3 is to be included in

[5] 39 Fed. Reg. 14188 (1974).

[6] 42 Fed. Reg. 13803 (1977).

[7] 44 Fed. Reg. 45362 (1979) (codified at 10 C.F.R. §§ 51.20(e) & 51.23(c) (1981)). The original Rule was codified at 10 C.F.R. Part 50 App. D and then transferred to 10 C.F.R. §§ 51.20(e) & 51.23(c). 39 Fed. Reg. 26279 (1974). The interim and final Rules amended those two sections. Hereinafter only Federal Register citations will be noted.

Although the original and interim Rules have been superceded by the final Rule, their validity is still at issue. Individual licenses that were granted under those Rules have been challenged in separate actions, many of which are being held in abeyance pending the resolution of the broader issues presented in this case. In this circuit alone there are at least five such cases. Lloyd Harbor Study Group, Inc. v. NRC, No. 73-2266; Aeschliman v. NRC, No. 73-1776; Saginaw Valley Study Group v. NRC, No. 73-1867; NRDC v. NRC, No. 74-1385; Coalition for the Environment v. NRC, No. 77-1905.

[8] The Rule is referred to as the "Table S-3 Rule" because the Table, which originated in a staff report, was initially labeled "S-3." *See* p. 16 *infra*. In most relevant respects, differences among the three versions of the Table S-3 Rule are insignificant. References to the "Table" or the "Rule," therefore, refer to all versions.

The fuel cycle activities addressed by the Table include uranium mining and milling, the production of uranium hexafluoride, isotopic enrichment, fuel fabrication, spent-fuel storage and disposal, reprocessing of irradiated fuel, transportation of radioactive materials and management of low-level and high-level wastes. For an explanation of the fuel cycle, *see* NRDC v. NRC, 547 F.2d 633, 637 n.3 (D.C.Cir. 1976), *rev'd sub nom.* Vermont Yankee Nuclear Corp. v. NRDC, 435 U.S. 519 (1978). As stated above, these cases concern only the waste-management and disposal aspects of the Table. The final version of the Table is reproduced below.

Table S-3.—*Table of Uranium Fuel Cycle Environmental Data* [1]
[Normalized to model LWR annual fuel requirement [WASH-1248] or reference reactor year [NUREG-0116]]

Environmental considerations	Total	Maximum effect per annual fuel requirement or reference reactor year of model 1,000 MWe LWR
NATURAL RESOURCES USE		
Land (acres):		
Temporarily committed [2]	100	
Undisturbed area	79	
Disturbed area	22	Equivalent to a 110 MWe coal-fired power plant.
Permanently committed	13	
Overburden moved (millions of MT)	2.8	Equivalent to 95 MWe coal-fired power plant.
Water (millions of gallons):		
Discharged to air	160	≈2 percent of model 1,000 MWe LWR with cooling tower.
Discharged to water bodies	11,090	
Discharged to ground	127	
Total	11,377	<4 percent of model 1,000 MWe LWR with once-through cooling.
Fossil fuel:		
Electrical energy (thousands of MW-hour)	323	<5 percent of model 1,000 MWe LWR output.
Equivalent coal (thousands of MT)	118	Equivalent to the consumption of a 45 MWe coal-fired power plant.
Natural gas (millions of scf)	135	<0.4 percent of model 1,000 MWe energy output.
EFFLUENTS—CHEMICAL (MT)		
Gases (including entrainment): [3]		
SO_x	4,400	
NO_x [4]	1,190	Equivalent to emissions from 45 MWe coal-fired plant for a year.
Hydrocarbons	14	
CO	29.6	
Particulates	1,154	
Other gases:		
F	.67	Principally from UF_6 production, enrichment, and reprocessing. Concentration within range of state standards—below level that has effects on human health.
HCl	.014	

Table S-3.—Continued

Environmental considerations	Total	Maximum effect per annual fuel requirement or reference reactor year of model 1,000 MWe LWR
Liquids:		
SO_4^-	9.9	From enrichment, fuel fabrication, and reprocessing steps. Components that constitute a potential for adverse environmental effect are present in dilute concentrations and receive additional dilution by receiving bodies of water to levels below permissible standards. The constituents that require dilution and the flow of dilution water are: NH_3—600 cfs. NO_3—20 cfs. Fluoride—70 cfs.
NO_3^-	25.8	
Fluoride	12.9	
Ca^{++}	5.4	
Cl^-	8.5	
Na^+	12.1	
NH_3	10.0	
Fe	.4	
Tailings solutions (thousands of MT)	240	From mills only—no significant effluents to environment.
Solids	91,000	Principally from mills—no significant effluents to environment.
EFFLUENTS—RADIOLOGICAL (CURIES)		
Gases (including entrainment):		
Rn-222		Presently under reconsideration by the Commission.
Ra-226	.02	
Th-230	.02	
Uranium	.034	
Tritium (thousands)	18.1	
C-14	24	
Kr-85 (thousands)	400	
Ru-106	.14	Principally from fuel reprocessing plants.
I-129	1.3	
I-131	.83	
Tc-99		Presently under consideration by the Commission.
Fission products and transuranics	.203	
Liquids:		
Uranium and daughters	2.1	Principally from milling—included tailings liquor and returned to ground—no effluents, therefore, no effect on environment.
Ra-226	.0034	From UF_6 production.
Th-230	.0015	

Table S-3.—Continued

Environmental considerations	Total	Maximum effect per annual fuel requirement or reference reactor year of model 1,000 MWe LWR
Th-234	.01	From fuel fabrication plants—concentration 10 percent of 10 CFR 20 for total processing 26 annual fuel requirements for model LWR.
Fission and activation products	5.9×10^{-6}	
Solids (burned on site):		
Other than high level (shallow)	11,300	9,100 Ci comes from low level reactor wastes and 1,500 Ci comes from reactor decontamination and decommissioning—buried at land burial facilities. 600 Ci comes from mills—included in tailings returned to ground. Approximately 60 Ci comes from conversion and spent fuel storage. No significant effluent to the environment.
TRU and HLW (deep)	1.1×10^{7}	Buried at Federal Repository.
Effluents—thermal (billions of British thermal units)	4,063	<5 percent of model 1,000 MWe LWR.
Transportation (person-rem):		
Exposure of workers and general public	2.5	
Occupational exposure (person-rem)	22.6	From reprocessing and waste management.

[1] In some cases where no entry appears it is clear from the background documents that the matter was addressed and that, in effect, the Table should be read as if a specific zero entry had been made. However, there are other areas that are not addressed at all in the Table. Table S-3 does not include health effects from the effluents described in the Table, or estimates of releases of Radon-222 from the uranium fuel cycle or estimates of Technetium-99 released from waste management or reprocessing activities. These issues may be the subject of litigation in the individual licensing proceedings.

Data supporting this table are given in the "Environmental Survey of the Uranium Fuel Cycle," WASH-1248, April 1974; the "Environmental Survey of the Reprocessing and Waste Management Portion of the LWR Fuel Cycle," NUREG-0116 (Supp. 1 to WASH-1248); the "Public Comments and Task Force Responses Regarding the Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle," NUREG-0216 (Supp. 2 to WASH-1248); and in the record of the final rulemaking pertaining to Uranium Fuel Cycle Impacts from Spent Fuel Reprocessing and Radioactive Waste Management, Docket RM-50-3. The contributions from reprocessing, waste management and transportation of wastes are maximized for either of the two fuel cycles (uranium only and no recycle). The contribution from transportation excludes transportation of cold fuel to a reactor and of irradiated fuel and radioactive wastes from a reactor which are considered in Table S-4 of § 51.20(g). The contributions from the other steps of the fuel cycle are given in columns A-E of Table S-3A of WASH-1248.

[2] The contributions to temporarily committed land from reprocessing are not prorated over 30 years, since the complete temporary impact accrues regardless of whether the plant services one reactor for one year or 57 reactors for 30 years.

[3] Estimated effluents based upon combustion of equivalent coal for power generation.

[4] 1.2 percent from natural gas use and process.

the environmental impact statement (EIS)[9] of each proposed light water nuclear power reactor, and thereby substitute for repeated individualized consideration of the environmental impact of the fuel-cycle activities needed to support each plant.[10]

10 C.F.R. § 51.20(e) (1981).

[9] In this opinion, "EIS" shall refer to the applicant's Environmental Report as well as the Draft and Final Statements for both the construction and operating license stages. 10 C.F.R. §§ 51.20-51.26 (1981). The Rule specifices a single set of data to be used in all of these documents. *Id.* at §§ 51.20 (e), 51.23(c), 51.26(a) (1981).

[10] Licensing and Regulatory Policy and Procedures for Environmental Protection, 10 C.F.R. Part 51 (1981).

Section 102(2)(C) of NEPA requires the EIS to accompany the license application through the existing review process. The Commission's general rules implementing NEPA provide that when matters covered by the EIS are at issue, the staff will offer the EIS in evidence at the adjudicatory hearing, and any party may take a position and offer evidence as well. The presiding officer will then decide the matters in controversy among the parties. 10 C.F.R. § 51.52(b) (1981). If such matters are resolved by rule, they are generally not subject to attack by way of discovery, proof, argument or other means in the adjudicatory proceeding. *See* 10 C.F.R. § 2.758 (1981).

The issues in this case largely concern the use of numerical values to depict the environmental effects of fuel-cycle activities. By describing such effects in this manner, the issue arises whether there is more to the fuel cycle's environmental impact than the bare numbers in the Table reveal, and, if so, whether licensing boards are prevented from looking beyond the Table to consider additional elements of the fuel cycle's environmental impact. One omission from the Table is explicit recognition of the uncertainties that underlie the projected effluent releases. This omission is particularly glaring in the Table's treatment of the long-term effects of solid high-level and transuranic wastes, which remain toxic for at least 250,000 years.[11] The Commission expects to dispose of those wastes, perhaps by first reprocessing a portion

[11] *See* NRDC v. NRC, 547 F.2d 633, 638-39, 651-52 & n.54 (D.C. Cir. 1976), *rev'd sub nom.* Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 (1978); note 14 *infra*. High-level wastes, which are highly radioactive, are produced in liquid form when spent fuel is reprocessed. Transuranic wastes are nuclides heavier than uranium that are produced in the reactor fuel. These nuclides, which are also highly toxic and may have half-lives of tens of thousands of years, can contaminate pieces of the fuel apparatus. As a result, hardware, particularly from reprocessing plants will have to be disposed of in a permanent repository.

The Commission has considered three possible fuel cycles: the "once-through," cycle in which fuel is not reprocessed; the uranium-only reprocessing cycle; and, for a short time, the uranium and plutonium reprocessing cycle. Transuranic and high-level wastes are produced in both reprocessing cycles. The uranium-only cycle also produces plutonium, which must be disposed of with the transuranic and high-level wastes. In the once-through cycle, the spent-fuel assemblies themselves constitute the waste. Table S-3 is intended to represent the environmental impact of both the once-through and the uranium-only recycle options, which are the only options under current consideration. The Table does so by listing, for each effluent, the highest of the two releases that would be expected under each cycle. 41 Fed. Reg. 45849, 45850 (1977).

of them, and in any event, by burying them in salt mines beneath the continental United States. The Tables indicate that the wastes will have no effect on the environment after they are sealed in salt mines.[12] In effect, therefore, the Table S-3 Rules instruct all licensing boards, when analyzing the environmental impact of a particular plant, to conclusively assume that such wastes will emit no radiological effluents into the environment after final burial.

The second omission from the Table is a description of the health, socioeconomic, and cumulative effects of the projected releases. The Table describes effluent releases in units of radioactivity per year. It does not evaluate the actual effects of those releases on human health, or on social and economic well-being, as an increasing number of plants continue to produce wastes. The issue raised by this aspect of the Table is whether the Table S-3 Rule allows licensing boards to take evidence on and consider those effects in individual licensing proceedings.[13] Finally, the effluent releases predicted in the Table are based on assumptions concerning the future availability of certain types of waste-management and disposal technology. The issue arises, therefore, whether the Commission has correctly found that the predicted releases represent technological goals that are economically feasible.

We conclude that the Table S-3 Rules are invalid because they fail to allow for proper consideration of the uncertainties concerning the long-term isolation of high-level and transuranic wastes, and because they fail to

[12] Actually, high-level and transuranic wastes are not even listed in the original Table. *See* 39 Fed. Reg. 14188, 14191 (1974).

[13] The final Rule has eliminated this defect by explicitly requiring licensing boards to consider these impacts in individual proceedings pending the promulgation of a more complete generic resolution. 44 Fed. Reg. 45362, 45371 (1979). Petitioners, therefore, only challenge the original and interim Rules on this ground. NRDC Brief at 18, 31, 38.

allow for proper consideration of the health, socioeconomic and cumulative effects of fuel-cycle activities. Therefore, we remand.

I. Background

Although a great deal remains to be learned about radioactive wastes, this much is known: 1) many of the wastes remain extremely toxic for a very long time;[14]

[14] Neither the toxicity of radioactive wastes nor the time required for their decay to safe levels can be simply stated. Both involve uncertainties and disputed assumptions and both depend on other variables. *See* National Academy of Sciences, National Research Council Committee on the Biological Effects of Ionizing Radiation, *The Effects on Populations of Exposure to Low Levels of Ionizing Radiation* (1980) [hereinafter cited as BEIR Report]; U.S. Nuclear Regulatory Comm'n, Environmental Survey of the Reprocessing and Waste Management Portions of the LWR Fuel Cycle 4-90 to 4-92 (NUREG-0116, Oct. 1976) [hereinafter cited as NUREG-0116]. NUREG-0116 is included in the Joint Appendix Supplement as Volume V [hereinafter the Joint Appendix is cited as JA. and the Joint Appendix Supplement as JAS]. [To avoid repetition, page citations will refer to NUREG-0116 and not to same page numbers in the JAS.] One federal government report summarizes the problem as follows:

> Waste consists of radioactive species of almost all chemical elements; some contain naturally occurring radioactive materials and others contain man-made radioactive materials; the wastes exist as gases, liquids, and solids. Yet for all their variety, radioactive wastes have one thing in common: as long as they remain highly radioactive, they will be potentially hazardous. This potential hazard results from the fact that exposure to and/or uptake of radioactive material can cause biological damage.
>
> In man, it can lead to death directly through intense exposure and a variety of diseases, including cancer, which can be fatal. In addition, radioactive material can be mutagenic thereby transmitting biological damage into the future.
>
> The central scientific fact about radioactive material is that there is no method of altering the period of time in

EDWARDS,* *Circuit Judge*, concurring in part and dissenting in part.

This case may prove to be one of the most important cases to be decided by the United States courts in this century. The United States Supreme Court, in reversing this court's previous remand of this case to respondent, the Nuclear Regulatory Commission (NRC or Commission), emphasized the magnitude of the problem it was sending back for our reconsideration:

> The Commission itself, in a pamphlet published by its information office, clearly recognizes that these wastes "pose the most severe potential health hazard . . . ." U.S. Atomic Energy Commission, Radioactive Wastes 12 (1965). Many of these substances must be isolated for anywhere from 600 to hundreds of thousands of years. It is hard to argue that these wastes do not constitute "adverse environmental effects which cannot be avoided should the proposal be implemented," or that by operating nuclear power plants we are not making "irreversible and irretrievable commitments of resources." 42 U.S.C. §§ 4332(2)(C)(ii), (v).

Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council, 435 U.S. 519, 538-39 (1978), *rev'g Natural Resources Defense Council v. Nuclear Regulatory Commission*, 547 F.2d 633 (D.C. Cir. 1976).

In this case we are required to review the continuing effort of the NRC to pit human intelligence against the most primordial force of nature. This force, when involved in its most awful manifestation, exceeds the power of flood, fire, pestilence, earthquake, hurricane and volcano. In this century, it has been demonstrated in this and other countries that this force can be employed for peace and war—for warming a baby's bottle and for nuclear holocaust.

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* Honorable George Edwards, Chief Judge, U.S. Court of Appeals for the Sixth Circuit, sitting by designation.

It is not the function of the judicial branch either to initiate or to halt the development of a nuclear power industry. These national policy choices are constitutionally vested in the President and the Congress of the United States, and they have been made in favor of proceeding.

This court's limited function is to determine from the agency record before us whether or not the Commission's decision to adopt certain Tables S-3, 10 C.F.R. § 51.20(e) (1981), was "arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."[1] The S-3 Tables instruct the licensing boards, which are delegated the task of licensing all new nuclear power plants, that there will be "zero" release of emissions or releases so small as to be insignificant,[2] from the nuclear waste accumulated or to be accumulated from plants now licensed or which may be licensed during the 2,500 centuries it will take for that waste to decay. *Thus the Commission seeks to preclude further licensing hearings from considering the hazards from unanticipated, accidental or willful release of emissions beyond those specified in the Tables from the highly toxic and potentially explosive wastes generated by nuclear power plants during temporary storage, reprocessing, transportation and 250,000 years of burial.* 46 Fed. Reg. 15154, 15156 (March 4, 1981).

I concur fully with Judge Bazelon's opinion for the court, except for the cost issue.

I write separately in concurrence to express deep concern for additional problems and uncertainties that I believe to be buried in the naked figures and enigmatic footnotes of the Tables S-3 that this appeal requires us to review. Further, in computing the cost of the proposed nuclear waste disposal system, the NRC has not included the costs of surveillance of and guarding the public from the toxic effects from nuclear waste at all disposal sites for somewhere between 10,000 to 250,000 years. As a consequence, I dissent from the opinion for the court on this issue and state my reasons at the end of this opinion.

[1] 5 U.S.C. § 706(2)(A) (1976).

[2] I choose the term "insignificant" to describe the impact of the many release figures set forth in the three S-3 Tables because the NRC's staff has equated them with the impact on human health of "a few puffs on a cigarette [or] a few sips of wine." 46 Fed. Reg. 15154, 15167 (March 4, 1981).

My concurrence with Judge Bazelon is based on the reasoning he has ably set forth. But I find what appear to me to be even more substantial reasons to agree with his result. An integral part of the "back end" of the nuclear fuel cycle involves the NRC's plan for reprocessing spent fuel rods. Reprocessing involves extraction from the spent fuel rods of either the remaining uranium and plutonium (uranium and plutonium recycle) or just the remaining uranium (uranium-only recycle). Both elements can be prepared as fuel usable in light-water reactor power plants. The uranium can be enriched and again fashioned into uranium-based fuel rods; in the alternative, the plutonium can be combined with uranium to form mixed oxide fuel rods. There are many indications in this record that the Commission originally intended to use both uranium and plutonium extracted by reprocessing as supplementary fuel in all nuclear power plants, licensed or to be licensed.

On April 7, 1977, a presidential order indefinitely suspended reprocessing of spent fuel. 13 WEEKLY COMP. OF PRES. DOC. 506. A new presidential statement on nuclear energy policy, however, dated October 8, 1981, "lift[ed] the indefinite ban which previous administrations placed on commercial reprocessing activities in the United States." 17 WEEKLY COMP. OF PRES. DOC. 1102. There is now reason to believe that the Commission will

proceed with plans to reprocess spent fuel rods thus extracting both uranium and plutonium.

Table S-3 in its final form purports to summarize all "releases" that may be expected in the entire nuclear fuel cycle, except for radon and technetium, which are irrelevant to our present considerations. Moreover, in a proposed "Narrative Explanation of Table S-3," the NRC states that "the environmental impacts from reprocessing and related waste management activities are nearly identical for the recycling of uranium and plutonium, and for the recycling of uranium only, as fuel in nuclear power reactors." 46 Fed. Reg. 15154, 15161 (March 4, 1981).

The proposed narrative avoids discussing the potential environmental impacts of plutonium. The Commission has not, however, disavowed its option to use both uranium and plutonium as reactor fuel—probably in the form of mixed oxide fuel. The NRC may well read any final approval of the S-3 Tables by the federal courts as foreclosing any further public hearings or litigation over the matter.

Absent any clear indication to the contrary from the Commission, I feel prudence requires this court to assume that approval of Tables S-3 would be read by the Commission as judicial sanction for its originally intended—and now presidentially permitted—employment of plutonium as reactor fuel.

Plutonium is the most dangerous substance yet known in the history of the world. Airborne, the tiniest speck of it breathed into a human being will produce lung cancer. Twenty pounds of this powder can be made into a nuclear bomb with the explosive force of the atomic bombs that destroyed Hiroshima and Nagasaki in the fall of 1945. The Commission's originally contemplated nuclear waste disposal scheme included reprocessing of all spent fuel rods from all nuclear power plants now licensed (71) or in contemplation (190). Such reprocessing, depending on the number of plants in operation,

would extract each year 35,000 to 93,500 pounds of plutonium[3] in the form of plutonium oxide. The plutonium, in the form of mixed oxide fuel, would then be transported by truck or rail through many heavily populated areas to all nuclear power plants wherever located in the nation and stored until it is consumed as nuclear fuel.

If this scheme is executed according to what I perceive to be NRC's plan, many private corporations will continually have on hand substantial stocks of the most lethal weapons material ever produced.

Unlike spent fuel rods, plutonium oxide powder can be approached by human beings without fear of radiation. If sealed in an airtight container, it can be transported without harm to the bearer. Also, it is estimated that many thousand people in the United States have the knowledge necessary to fashion a nuclear bomb from this material.[4]

In the dangerous world in which we live, attempts by foreign or domestic terrorists to divert plutonium oxide to international or domestic blackmail or catastrophic destruction must be anticipated.

How NRC contemplates protecting this huge amount of hazardous material from forcible seizure on the highways and rail lines of the United States, and from theft

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[3] Each 1,000 MWe Light Water Reactor produces 200-250 kilograms of plutonium a year. Speth, Tamplin & Cochran, *Plutonium Recycle: The Fateful Step*, BULLETIN OF ATOMIC SCIENTISTS 15, 16 (November 1974). Two hundred-250 kgs. times 2.2 lbs/kg. equals 440-550 lbs. per reactor per year. If we assume a figure of 70 operating reactors, 70 times 440-550 equals 30,800-38,500. If we assume 170 projected reactors, 170 times 440-550 equals 74,800-93,500.

[4] J. McPhee, THE CURVE OF BINDING ENERGY 124 (1974) (figure from interviews with physicist Theodore Taylor). *See* H. Feiveson & T. Taylor, NUCLEAR PROLIFERATION 136-144 (1977); T. Taylor & M. Willrich, NUCLEAR THEFT: RISKS & SAFEGUARDS 12-20 (1974).

or illegal diversion from storage at between 71 and 190 nuclear power plants is most inadequately dealt with in this record.

Finally, the ancient question, "But who is to guard the guards themselves?" is pertinent. The nuclear weapons of the United States are closely guarded by its armed forces. Their employment is subject to command controls so carefully devised that they terminate in the hands of the President of the United States. Yet it appears that the NRC plans to ship bomb-grade materials freely by road or rail, guarded by civilian employees of the private corporation that secures the reprocessing contract. 10 C.F.R. § 70 (1981). And it appears that the NRC may place supplies of plutonium oxide in the form of mixed oxide fuel with its awesome power on the premises of a total of 71 to 190 nuclear power plants under the control of private corporate officers chosen by and responsible to as many private corporate boards of directors. 10 C.F.R. § 72 (1981).

In the long history contemplated for the nuclear power adventure, we cannot be certain that the raw power placed in so many private hands will never be used against the security of our people or of our form of government.

Any failure to deal with the hazards of this plan may be read by the NRC as validation sub silentio of a plan involving incredible dangers. In its original consideration of using atomic energy for production of electric power, Congress repeatedly required "the protection of the health and safety of the public." For the reasons which follow, I would not risk the dangers and uncertainties contained in the S-3 Tables without a prior remand of the NRC reprocessing, transportation and storage plans for thorough briefing and argument as to the legality of said plans for the use of plutonium as fuel under the public health and safety requirements of the Atomic Energy Act of 1954. 42 U.S.C. §§ 2012(d), (e), 2133(b), (d), 2232 (a) (1976).

WILKEY, *Circuit Judge*, dissenting: In *Greater Boston Television Corp.* v. *FCC*[1] the late Judge Leventhal first enunciated what has come to be known as the "hard look" doctrine for judicial review of agency action.[2] When today's case first came to this court (*Vermont Yankee I*), Judge Bazelon upped the ante by endorsing the notion of a "*good*, hard look."[3] Now, notwithstanding clear directions to the contrary from the Supreme Court (in *Vermont Yankee II*),[4] Judge Bazelon has applied a standard which is best described as requiring "too hard a look." If there was ever a doubt prior to today, it is now clear that this court is committed to an assumed role as high public protector of all that is good from perceived evils of the nuclear age.

In his lengthy opinion today (*Vermont Yankee III*) Judge Bazelon adapts to a new heading an approach unanimously rejected by the Supreme Court in *Vermont Yankee II* and steps boldly into the arena of nuclear regulation to vacate all of the NRC's original, interim, and final fuel cycle rules—the product of nearly a decade of agency and judicial proceedings and an administrative record of thousands of pages in length. He justifies this action on a conclusion that the Commission somehow violated NEPA and the APA by adopting a generic table embodying a prediction that nuclear power plant wastes can someday be safely stored.

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[1] 444 F.2d 841 (D.C. Cir. 1970), *cert. denied*, 403 U.S. 923 (1971).

[2] *Id.* at 851-53. *See Pikes Peak Broadcasting Co.* v. *FCC*, 422 F.2d 671, 682 (D.C. Cir.), *cert. denied*, 395 U.S. 979 (1969). *See also infra* pp. 36-38.

[3] *NRDC* v. *NRC*, 547 F.2d 633, 644 (D.C. Cir. 1976) (emphasis added) [hereinafter *Vermont Yankee I* maj. op.].

[4] *Vermont Yankee Nuclear Power Corp.* v. *NRDC*, 435 U.S. 519 (1978) [hereinafter *Vermont Yankee II*].

Judge Bazelon's majority opinion has braided from NEPA, the APA, and his own perceptions of public good a novel standard of substantive and procedural scrutiny of NRC activity which we as a court are unauthorized to create and ill-equipped to manage. It has ignored the Supreme Court's unequivocal mandate that we limit our examination in this matter to the administrative record to determine only whether the NRC's rule was "arbitrary and capricious within the meaning of § 10(e) of the Administrative Procedure Act, 5 U.S.C. § 706."[5] On the record before us, which has been supplemented extensively since *Vermont Yankee II*, I cannot say that under the appropriate standard the rule fails. Accordingly, I would affirm.[6]

I. ANALYSIS

The cases before us today represent the latest chapter in perhaps the most celebrated administrative litigation of our time. Although the procedural backdrop of the litigation, adequately rehearsed in Judge Bazelon's opinion,[7] is extraordinarily complex, I believe the analysis and resolution of the central issues are comparatively simple.

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[5] *Vermont Yankee II* at 536 n.14.

[6] I express here only my disagreement with the analysis found in sections III.A.-D. of Judge Bazelon's opinion [hereinafter Bazelon op.] and the disposition found on pages 68-69.

I agree with the analysis under Section III.E. of Judge Bazelon's opinion, affirming the Commission's decisions regarding economic feasibility on the ground that they were not arbitrary and capricious. I question only Judge Bazelon's decision not to apply the same form of the arbitrary and capricious test to the other issues in this case. *See infra* p. 54.

[7] Bazelon op. at 13-28.

That analysis must begin with a review of the case history, culminating in the *unanimous* directive given us by the Supreme Court in *Vermont Yankee II*. Both the holdings and the language of that opinion, essentially endorsing Judge Tamm's original concurrence in *Vermont Yankee I*,[8] clarify the appropriate standard for our review of the informal rulemaking challenged here. When we examine the agency's rulemaking under that standard, two further points become clear. First, the agency acted well within the scope of its broad authority by choosing to consider the issue of long-term risks and uncertainties from radioactive waste disposal *generically*, rather than in a series of repetitive individual power plant licensings. Second, contrary to the majority's joint assertions, the agency did not act arbitrarily and capriciously or "not in accordance with law" by concluding that licensing boards need not factor uncertainties into their environmental analyses, but, that "for the *limited purposes* of the fuel cycle rule it is reasonable to base impacts on the assumption which the Commission believes the probabilities favor": namely, that sites can be found and the technology developed effectively to isolate radioactive waste from the biosphere.[9]

These conclusions are not only compelled by a careful review of the extensively supplemented record on appeal; they are totally consistent with all of the evidence reviewed in Judge Bazelon's opinion. That record clearly reveals that the Commission has fulfilled its procedural obligations under § 102(2)(C) of NEPA[10] and the Administrative Procedure Act,[11] has taken the requisite "hard look" at the waste storage question, and has supported its final rule by "reasoned decisionmaking." This court may require no more.

[8] *NRDC* v. *NRC*, 547 F.2d 633, 658 (D.C. Cir. 1976) (Tamm, J., concurring in result) [hereinafter *Vermont Yankee I* concurrence].

[9] Licensing and Regulatory Policy and Procedures for Environmental Protection, 10 C.F.R. Part 51 (1980), 44 Fed. Reg. 45,362, 45,369 (1979) (emphasis added) [hereinafter Final Rule Statement of Basis and Purpose].

We easily resolve this appeal if we recognize the obvious—we live in a world of risk, uncertainty, and rapid technological change. We not only expect, we demand, expert agencies charged with broad statutory discretion to make predictions en route to factual, technical, and policy judgments. "Where existing methodology or research in a new area of regulation is deficient, the agency *necessarily enjoys broad discretion* to attempt to formulate a solution to the best of its ability on the basis of available information."[12] So long as the agency adequately observes statutory procedures, gives close scrutiny to all relevant considerations, and engages in reasoned decisionmaking, it is not our job to substitute our judgment for the agency's to reach what we perceive to be the best or correct result. Yet this is precisely what the majority has accomplished in this case.

II. Background

A. The Challenged Rules

The rules at issue here[13] resulted from an informal, "generic" rulemaking instituted by the NRC in November

[10] 42 U.S.C. § 4332(2)(C) (1976).

[11] 5 U.S.C. § 551 *et seq.* (1976).

[12] *Industrial Union Dep't, AFL-CIO* v. *Hodgson*, 499 F.2d 467, 474 n.18 (D.C. Cir. 1974) (emphasis added).

[13] Petitioners challenge the validity of the original, interim, and final versions of the rule published at 44 Fed. Reg. 45,362 (1979) and codified at 10 C.F.R. §§ 51.20(e) & 51.23(c) (1981). While *Vermont Yankee I* addressed the original rule and *Vermont Yankee II* issued after the interim rule had been promulgated, this is the first case to address the validity of the final rule.

ATTACHMENT 2

S. 1080 1/	H.R. 746 2/	E.O. 12291 3/
REGULATORY ANALYSIS	REGULATORY ANALYSIS	REGULATORY ANALYSIS
1. Regulatory analysis (cost/benefit) for major rules*/ with explanation of how benefits relate to costs and why rule is more cost-effective than alternatives.	1. Similar to S. 1080.	1. Similar to S. 1080.
2. When not inconsistent with law, agency may issue only those major rules whose benefits justify costs and whose cost-effectiveness is greater than alternatives.	2. The more costly alternative may be selected, with explanation.	2. Similar to S. 1080.
3. Major rule = rule agency or executive determines is likely to have $100 million annual effect on economy; or designated as major by agency or executive as likely to substantially increase costs or prices or have significant adverse effects on specified areas or on predominately domestic enterprises.	3. Major rule = rule having $100 million impact on economy; or having substantial impact on health, safety, or environment; or designated as major by agency or executive due to adverse effects on costs, prices, competition, employment, etc.	3. Major rule = $100 million impact; or substantial change in costs or prices for individual industry, region, or level of government; or significant adverse effect on competition, employment, etc. or on ability of U.S. based concerns to compete; or rule designated major by OMB
4. Executive determination or designation of major rule not reviewable in court; agency determination under $100 million test reviewable in court; agency designation under other tests not reviewable.	4. Judicial review of regulatory analysis, including determination of major rule, prohibited.	4. No legally enforceable right created.

*/ Both bills adopt, with modifications, the definition of "rule" found in 5 U.S.C. §551(4). One exclusion from the definition in both bills is of a "rule of particular applicability" relating broadly to such matters as prices, rates, reorganizations, and so forth.

1/ S. 1080, 97th Cong., 2nd Sess., 128 Cong. Rec. 2713 (1982), passed 94-0.

2/ H.R. 746, 97th Cong., 1st Sess. (1981).

3/ Exec. Order No. 12291, 46 Fed. Reg. 13193 (1981).

S. 1080	H.R. 746	E.O. 12291
EXECUTIVE OVERSIGHT	EXECUTIVE OVERSIGHT	EXECUTIVE OVERSIGHT
1. Executive authorized to establish regulatory analysis procedures for both executive and independent agencies; OMB must submit in writing reasons for rejecting any proposed rule.	1. Director of OMB given oversight authority of executive agencies re compliance with respect to regulatory procedures. Independent agencies specifically exempted from executive oversight.	1. OMB review, evaluation, and clearance of all rules, except with respect to independent agencies.
2. All written comments to and from executive must be retained in rulemaking file; agencies must reveal significant changes made in response to OMB review.	2. All documents exchanged between OMB and agency must be in file; public access to file.	2. --
JUDICIAL REVIEW	JUDICIAL REVIEW	JUDICIAL REVIEW
Modified Bumpers amendment - no presumption for or against validity of agency action; must have substantial support in rulemaking file.	Substantial support in rulemaking file.	--
LEGISLATIVE VETO	LEGISLATIVE VETO	LEGISLATIVE VETO
Two-House legislative veto -- if either House fails to agree to a resolution of disapproval, the rule becomes effective.	Congressional veto by joint resolution (requiring approval of President) -- if either House fails to act on the resolution the rule becomes effective.	--

78

79

S. 1080	H.R. 746	E.O. 12291
REGULATORY AGENDA	REGULATORY AGENDA	REGULATORY AGENDA
Agencies to prepare semi-annual regulatory agenda of proposed rules.	Similar to S. 1080.	Similar to S. 1080
TEN-YEAR REVIEW	TEN-YEAR REVIEW	TEN-YEAR REVIEW
Agencies to review all major rules within ten years.	Similar to S. 1080.	--
VENUE	VENUE	VENUE
If proceedings instituted in two or more courts and first instituted more than 5 days before second, record filed where first proceeding instituted. If two proceedings instituted within 5 days of one another, the Administrative Office of the U.S. Courts shall designate venue per a random selection process to be developed.	Similar to S. 1080, except institution of proceedings within 10 days of one another, rather than 5, results in transfer of random venue decision to the Administrative Office of the U.S. Courts.	--

80

81